JUNE 1995
Volume 63 No 6

AMATEUR RADIO

WIRELESS INSTITUTE OF AUSTRALIA

Journal of the Wireless Institute of Australia

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* Coaxial Travelling Wave Antenna
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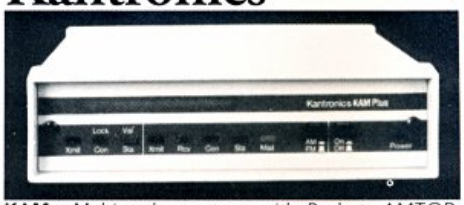

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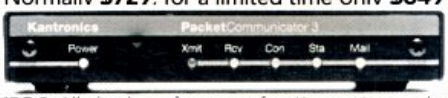

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Cover

Len Robertson VK3ALD Who says that home building of amateur radio equipment is a lost art? Len first went on the air in the early 1950s and has been a "home brewer" ever since. Not only that, but Len runs QRP with an output power of around three watts. A separate receiver and transceiver are used. The receiver (bottom left in the photo) uses a direct conversion tunable IF working from 5.1 to 5.6 MHz. Fixed tuned converters then provide coverage of the 40, 30, 20, 15 and 12 metre

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Editor's Comment

Freedom of Speech

One of the disadvantages of having written so many editorials for *Amateur Radio* is that I find I suffer a serious risk of repeating myself. This is my 116th, by the way! I was going to call it "Free Speech" until I checked the list and found that was the title of my effort for November 1991 (but followed by a question mark). There I was concerned more with what could or could not be published so as to offend only a minimum of readers. The question of individual opinions differing from WIA policy was also mentioned.

This time I am proposing, briefly, to say something about another angle. What does it actually cost people to speak? In this context it is worth noting that in our recent negotiations with the SMA on licence fees one point that was emphasised was that there are no licence fees in the USA. This is because the American Constitution guarantees free speech, and Congress has been persuaded that licence fees for amateur stations contravene this right. The Australian Constitution provides for free trade between States, and freedom of religion, but says nothing about freedom of speech.

We may also enquire what is the difference between paying for a licence, and paying for a transceiver, if both are necessary pre-requisites to use of the amateur bands? I suppose a licence, being essentially legal permission, no more tangible than the paper on which it is written, must differ from actual hardware. The cost of producing hardware must always greatly exceed the cost of producing a paper certificate.

Then, of course, there's the other angle of saying or writing something which someone else claims is defamatory, or affects their well-being in some way. This might be, not only in speech or print, but in electronic form on a BBS, or the Internet, or wherever. If the aggrieved party sues you and wins the case, your speech may well prove to have been very expensive indeed!

Possibly there is no such thing as freedom of speech in the real world. But perhaps some is cheaper than others!

Bill Rice VK3ABP
Editor
ar

Continued from page 1

bands. Cascaded audio filters give a bandwidth of 3 kHz for SSB reception. The transmitter starts with a 9 MHz phasing exciter and a 5 MHz VFO, which give coverage of 20 metres plus output on 4 MHz. Mixers then provide output on 7 and 21 MHz. These mixers and a broadband linear amplifier are in the cabinet on the right. Len admits to using a Drew Diamond design for the linear. The rest of the station is home designed. A full wave loop antenna, fed at the top with 75 ohm twin lead, is used on 20 metres. For 40 metre operation the loop is opened at the bottom so that it becomes a folded-in dipole. With this station, Len works all round Australia and, occasionally, even a bit of DX.

Photo by Ron Fisher VK3OM

WIA News

US Hams at Oklahoma Bomb Site

Radio amateurs assisted rescue operations at the horrific explosion which destroyed a US federal office building in Oklahoma City in April. Local amateurs set up an emergency coordination network within minutes of the event, providing vital emergency communications to rescue and relief organisations.

According to reports from Oklahoma amateur, Thomas Webb WA9AFM/5, circulated within hours of the blast, city telephone circuits were jammed and often not operating. The network operated non-stop for almost 200 hours after the 19 April tragedy, providing point to point communications until the telephone service was able to be repaired and restored.

A net control station located at the Oklahoma City Salvation Army Emergency Coordination Centre coordinated the amateur radio operations which involved more than 20 stations located around the blast area.

The volunteer amateur operators provided communications for the five Salvation Army canteens attending the scene, the Salvation Army Headquarters in Oklahoma City, the Red Cross Command Post and the primary search and rescue command post.

A combination of hand-held and mobile amateur equipment was used. A mobile repeater station was set up at a Salvation Army canteen to overcome blocking of signals by buildings in the area.

Amateurs assisting with communications to rescue workers also transported vital supplies required at locations around the disaster area, and handled health and welfare inquiries from friends and relatives outside Oklahoma City.

The volunteer communications support effort involved a total of more than 100 US radio amateurs, most from the Oklahoma City area.

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

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VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			

Note: All times are local. All frequencies MHz.

Weekly News Broadcasts	1995 Fees
3.570 MHz LSB, 146.950 MHz FM each Wednesday evening commencing at 8.00 pm local time.	(F) $70.00 (G) (S) $56.00 (X) $42.00
From VK2WI 1.845, 3.595, 7.146*, 10.125, 24,950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2m, 70 cm, 23 cm. Voicemail highlights on (02) 724 8793. The broadcast text is available on packet.	(F) $66.75 (G) (S) $53.40 (X) $38.75
MONTHLY BROADCAST on the second Sunday of the month, starts 10.30 am. Primary frequencies 3.615 LSB, 7.085 LSB, and FM(R)s 146.700 Mt Dandenong, 147.250 Mt Macedon, 147.225 Mt Baw Baw, and 2 m FM(R)s VK3RMA, VK3RSH, VK3ROW. 70 cm FM(R)s VK3ROU and VK3RGL. Major news under call VK3WI on Victorian packet BBS.	(F) $72.00 (G) (S) $58.00 (X) $44.00
1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) $72.00 (G) (S) $58.00 (X) $44.00
1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555, 7065, 10.125, 146.700, 0900 hrs Sunday	(F) $72.00 (G) (S) $58.00 (X) $44.00
146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) 147.225(R), 147.250(R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker broadcast repeated on 146.700 at 1900 hrs.	(F) $60.75 (G) (S) $48.60 (X) $32.75
146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) $69.00 (G) (S) $55.65 (X) $40.00

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■ Antennas

Coaxial Travelling Wave Antenna

Leo Weller VK3YX tells of his experiences with an experimenter's delight antenna.*

This antenna experiment was initiated by an article written by George VK2EHN in *Amateur Radio,* September 1993. It became more interesting after I read the letter from Peter VK6IS in *Amateur Radio,* November 1993. Actual work was started after re-reading the original patent in *Amateur Radio,* October 1992.

I found that the performance is good. It has qualities not found in any other antenna. With so little information available it is an experimenter's delight. Nevertheless, looking through my notes, more than 80 different baluns have been wound with an endless number of readings. Although this was time consuming the result is most gratifying.

Theory of Operation

The antenna consists of a length of tubing with wire in the centre, similar to a coaxial cable. On one end the centre wire is connected to the tubing. Power is supplied to the tubing and centre wire at the other end. The RF current flowing in the centre wire is fully shielded by the tubing. The radiation is from the returning current as skin effect on the outside of the tubing. For efficient working resonance cannot be in an amateur band. Power must be supplied balanced and SWR must be high. An antenna tuner is required to match into a 50 ohm transceiver. Being a low impedance device, there are no high voltage spots and current is high and equal in the whole circuit.

Observations

With an antenna so different from all accepted theories and practices one does not know what to expect and every observation is a discovery for which one tries to find an explanation.

(1) I noticed no reversed TV interference. I have been plagued with that for years.

(2) No TV interference. As a matter of fact I removed all suppressors, braid-breakers and the like from my own TV set.

(3) No earth wire or radials on the antenna. Every attempt to do so reduced receive sensitivity.

(4) Easy and smooth tuning with a Z match antenna tuner. After setting C_1 in the middle of the band, C_2 will tune to give an SWR of 1:1 right across the band, even on 15 metres.

(5) Good signal to noise ratio. This compared favourably with an 80 m dipole with open feeders.

(6) Sensitivity on receive and field strength on transmit increases step by step on each higher frequency amateur band.

(7) No high voltage spots. Even at 50 watts a sensitive neon globe did not glow. Touching the antenna with the hand pushes the SWR meter off the scale.

(8) High current. I measured 0.5 A at 5 watts on all bands, except the 40 m band, including 160 m and all WARC bands.

(9) The 40 metre band needs more power to achieve 0.5 A and tuning is different. This does not affect performance.

(10) Three turns of heavy, insulated wire around the tubing and short circuited reduced receive sensitivity. This is the reason for the PVC saddles and clamps.

(11) A two way switch to the centre wire or outside tubing was connected to a Bearcat DX 1000 communication receiver right on the base of the antenna. Most stations were received on the same S meter reading in either position. However, some stations indicated up to two S points more on the centre wire. This does not correlate to frequency. George VK2EHN indicates the same phenomenon.

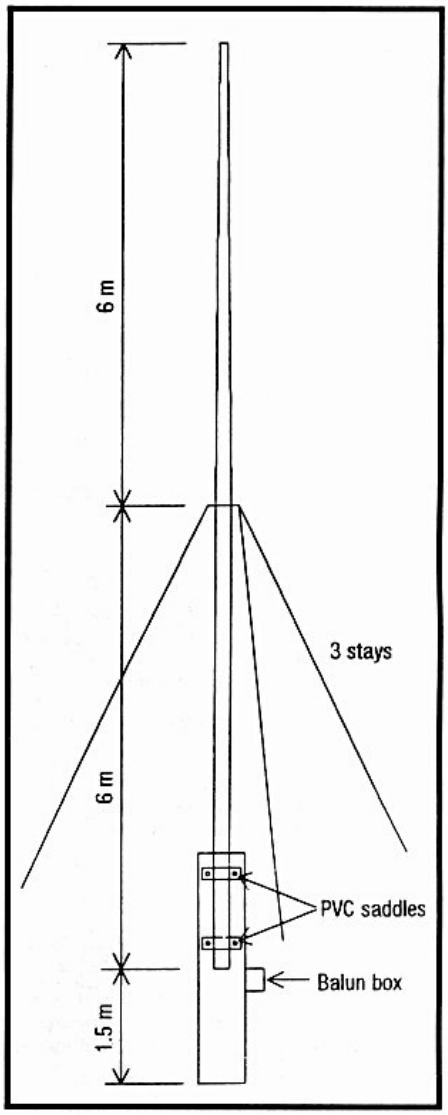

Figure 1.

Testing

All testing was performed on 3.5444 MHz for which a crystal was on hand. On the first test this crystal, in a crystal tester connected to a one metre long antenna at a distance of eight metres, gave S 2 on the receiver. By the end of the experiment the distance was twice that and the antenna was only 12 cm to achieve S 6.

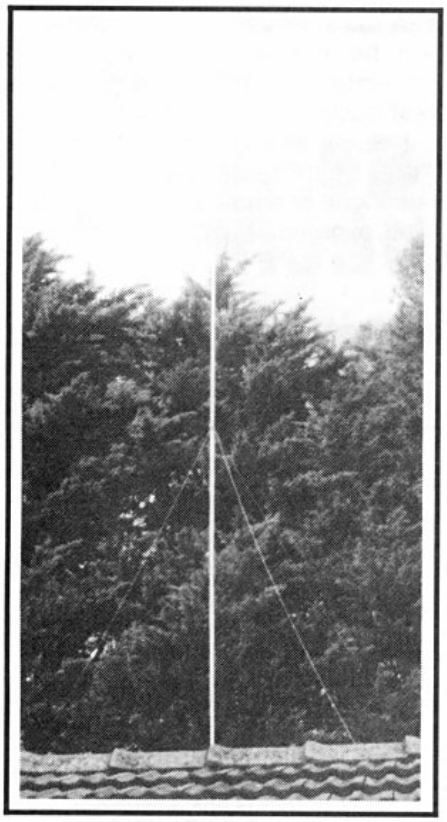

Photo 1 — Coaxial travelling wave antenna.

For transmitting I used 5 W of power with a 1:1 SWR. Firstly, a tuned field strength meter was used with a one metre antenna. Finally, an aperiodic field strength meter was used with a 30 cm antenna.

Construction

The antenna is constructed from three equal lengths of imperial aluminium tubing, total length 12 metres. The diameter of the lowest section is 1.75 inches, the middle section is 1.5 inches and the top section is 1.25 inches. The wall thickness is .125 inch. This tubing is perfect for telescoping. Both joints slide into each other for 25 cm. Four thin saw cuts, 12 cm long lengthwise, plus a good quality stainless steel hose clamp, ensure intimate electrical contact.

In the centre of the tubing is a PVC covered wire of 5 mm diameter, or 47/03. It is kept in the centre with triangular perspex spacers 2 mm thick and 30 cm apart. A centre hole in these spacers fits the centre wire and they are held in place with a suitable plastic to plastic glue (see Fig 2).

The centre wire is connected to the outside on the top of the tubing, via two crossed copper strips. After soldering the strips are bent down over the outside of the tubing and secured with 8 self tapping screws (see Fig 3).

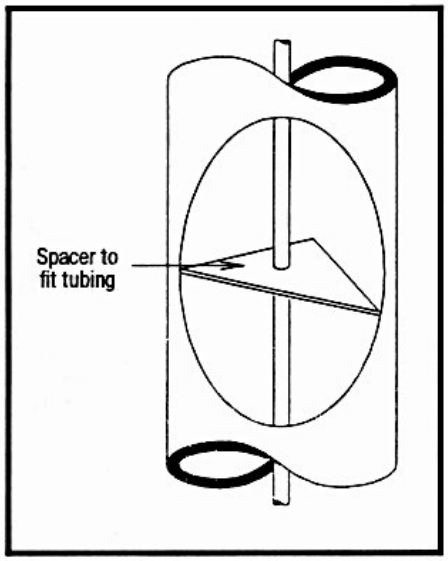

Figure 2.

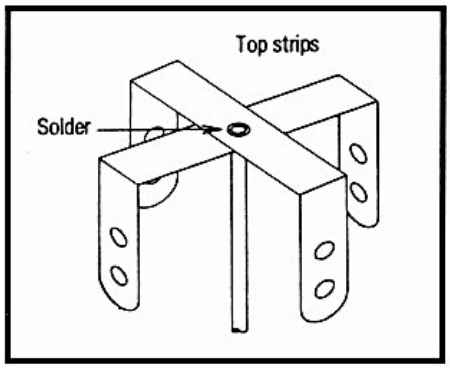

Figure 3.

On the bottom of the antenna, on the outside, are two solder lugs 180° apart. These are fastened with 6 mm copper screws, washers and nuts (see Fig 4). Half way up the mast is a PVC clamp holding three 6 mm polyester stays (see photo 1). The antenna is fixed to a mast stub with PVC saddles (see Fig 1 and Photo 2).

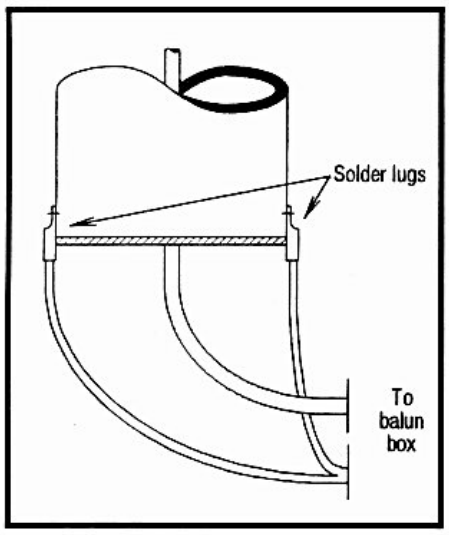

Figure 4.

Practical Installation

The simplest and most effective way of installation is with open transmission line. With the single coil Z match (*Amateur Radio,* April 1993, p14) this produced the highest receive sensitivity and easiest tuning. Not more than 9 m of transmission line, 2 mm wire, 40 mm spacing and perspex spacers 25 mm apart. If output from the tuner is not exactly balanced the centre wire must be connected to the highest output.

Another way of installation is with a good quality coaxial cable up to 15 m, a 50 to 200 ohm balun on the antenna and a T match network tuner. Two different baluns are satisfactory. Number one made with the Amidon balun kit from Dick Smith. Number two on a 12 mm diam, 75 mm long ferrite rod.

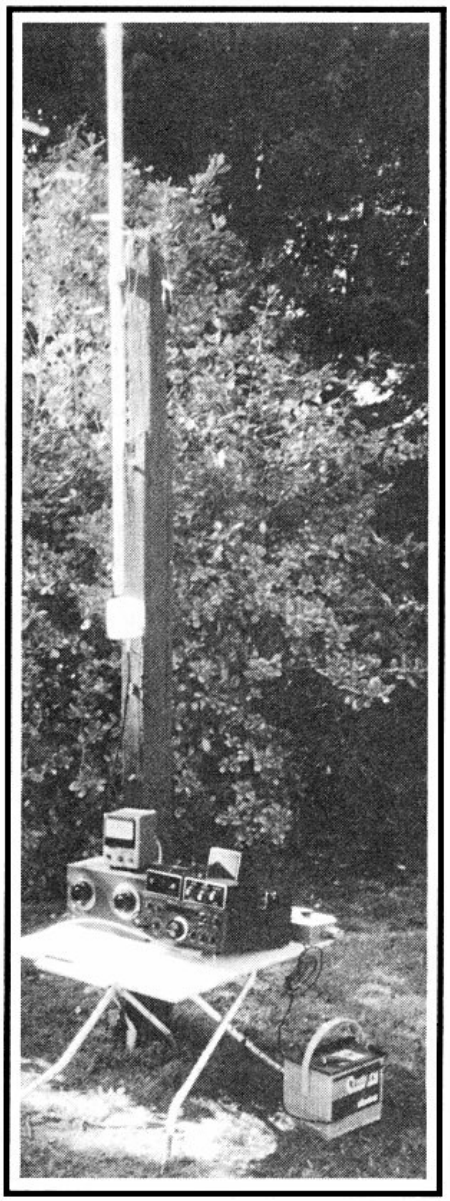

Photo 2 — Base of antenna under test. Note the antenna mounting.

For the Amidon core, two lengths of 7.8 mm (13 B&S) 90 cm long laced together and 16 turns wound neatly on the whole circumference.

For the rod, two lengths of wire, 7.45 mm diam. (15 B&S) and 60 cm long, twisted to one twist per cm and wound closely-spaced for 12 turns.

Conclusion

It is unlikely that, in the first experiment, maximum performance can be achieved. Much more work will be needed to arrive at fully understanding this system and the real design considerations.

I would like to collect data from other experimenters by letter, telephone or amateur radio regarding their experience with this project.

**46 Peperell Avenue, Syndal, VIC 3150*

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QSP News

The World's Rarest Callsign Prefixes

Below are listed some, but not all, of the world's rarest prefixes. If you are a really excellent DXer you may just have one, maybe two or even three of them.

If you are very generous as well as being a top DXer, you might send them to the Honorary Curator of the WIA QSL Collection, Ken Matchett VK3TL at 4 Sunrise Hill Road, Montrose VIC 3765 (tel 03 728 5350) for inclusion in the WIA's own national QSL collection.

Please lend a hand in building up the Collection as an historic reference library. All donations are acknowledged both personally and in the pages of *Amateur Radio* magazine.

AC5 (USA); AI4; CM4, 0; CO4, 9, 0; CP4, 9; CU9; CY4, 8; CY9 (St Paul); DG0; DM1; EM9; EO7; ES9; DT1, 5, 9; EL6; F4; FE4, 7, 0; GD8; HH6, 8, 0; HP5, 7; HR7, 8; HS8; JW3, 4; JY0; JX0; KQ0; LB4, 0; LX4, 5; LZ4, 8; NB2, 4; NC4; NE2; NG8; NO3; NT3; NV5, 9, 0; NW5; OG9; OK9; OL6; ON3; OT1, 8, 0; OY0; OZ0; SK8; SL9; SM9; SN2, 3; SV6; TF8, 9; TK1, 2; TM4, 7, 8; TO1, 4, 7; U7; WD7; WF0; WG1; WI2; WM8; WU1; WV7; WW2, 3; WZ3; Y70, 77; ZS0; 4M8, 9; 4N8; 4O5, 8; 4Z7.

Sign up a new member today, we need the numbers to protect our frequencies and privileges.

■ Filters

The VK5BR Audio Filter Modifications to Include an Adjustable Rejection Band.

Lloyd Butler VK5BR describes improvements to his adjustable audio filter system for the receiver.*

Introduction

In the March 1995 issue of *Amateur Radio,* I described an adjustable audio filter system which can be added to the receiver. One feature of the system is a rejection notch which has a 3 dB band rejection width of about 100 Hz. This is fine to reject an interfering carrier or CW signal. However, I pointed out in the text that some means to increase the width of the rejection band width might be a useful addition to reject wider bandwidth interfering signals.

The 100 Hz rejection notch remains unchanged, but I have added a simple modification to enable the high pass (HP) and low pass (LP) filter sections to be set up for a variable width rejection band. This is an alternative to their normal function of setting the limits of the pass band. The modification is simple in that it is achieved by the addition of one switch and one resistor and changing the value of one other resistor.

HP and LP Filters in Parallel

To understand how the system works, refer to figures 1 and 2. To achieve the bandpass characteristic of figure 1, the signal is first fed through the HP filter which sets the low frequency cut-off and then through the LP filter which sets the high frequency cut-off. Observe that the HP cut-off is lower than the LP cut off.

To achieve the band reject characteristic of figure 2, the two filters are connected in parallel with

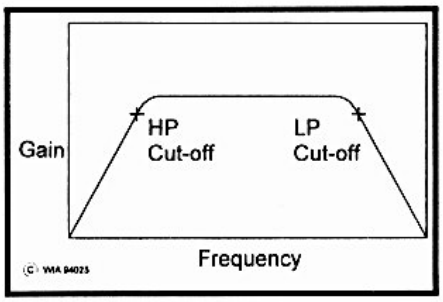

Figure 1 — Normal sequential operation of HP and LP filters with cut-off frequencies set for a wide bandpass.

inputs both connected to the input signal and outputs combined after filtering. Observe that, for this operation, the HP cut-off is now set to a higher frequency than the LP cut-off.

The block diagram for the whole system, as published in the previous article, is repeated in figure 3 but with the additional switch S4 to enable the filters to be switched from their normal sequential connection to the parallel connection. Detail of the circuit changes is given in figure 4.

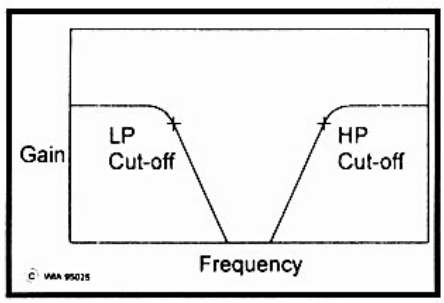

Figure 2 — Parallel connection of HP and LP filters with cut-off frequencies set for a wide band rejection.

Resistor R33 and capacitor C18 form the original post anti-alias filter. Addition of resistor R42 to this circuit enables it to be also used as a mixer to combine the output of the LP filter via R33 with the output of the HP filter via R42.

The maximum setting of the cut-off frequency in the HP filter was originally 1.2 kHz. This has been altered to 2 kHz so that the upper frequency roll over of the rejection trough could be extended a little higher. Resistor R17 in the HP Clock circuit has been changed from 10 k to 4.7 k ohms to achieve this alteration.

Operation

To operate in the discussed band reject mode, switch S1 is set to the HP/LP position, notch switch S2 is left off, and the new switch S4 is set to the band reject position. The LP adjust potentiometer is set for a cut-off at the low frequency side of the rejected band and the HP adjust potentiometer is set for a cut-off at the high frequency side of the rejected band. It is desirable to have a frequency calibration on the adjustment controls otherwise it is difficult to know exactly what one is doing. Pointer knobs are coupled to each of the three filter adjustment controls in the filter box. As originally assembled, no calibration to indicate the setting of the pointers was provided. A back plate of paper is now glued to the box and this is marked to show the approximate frequency cut-off indicated by the pointing of each of the three knobs.

It is not intended that a condition be set up whereby the LP cut-off is set higher than the HP cut-off (as in bandpass operation). This crosses over the two pass bands of the two filters causing what might initially appear to be an all-pass condition. Actually, it is not quite all-pass, as the phase of the output from one filter does not track with the other and, when the outputs are combined, troughs occur in the frequency response curve due to signal cancellation. The problem does not occur when the parallel filters are set up for wide band rejection as there is no frequency at which both filters together provide an appreciable output.

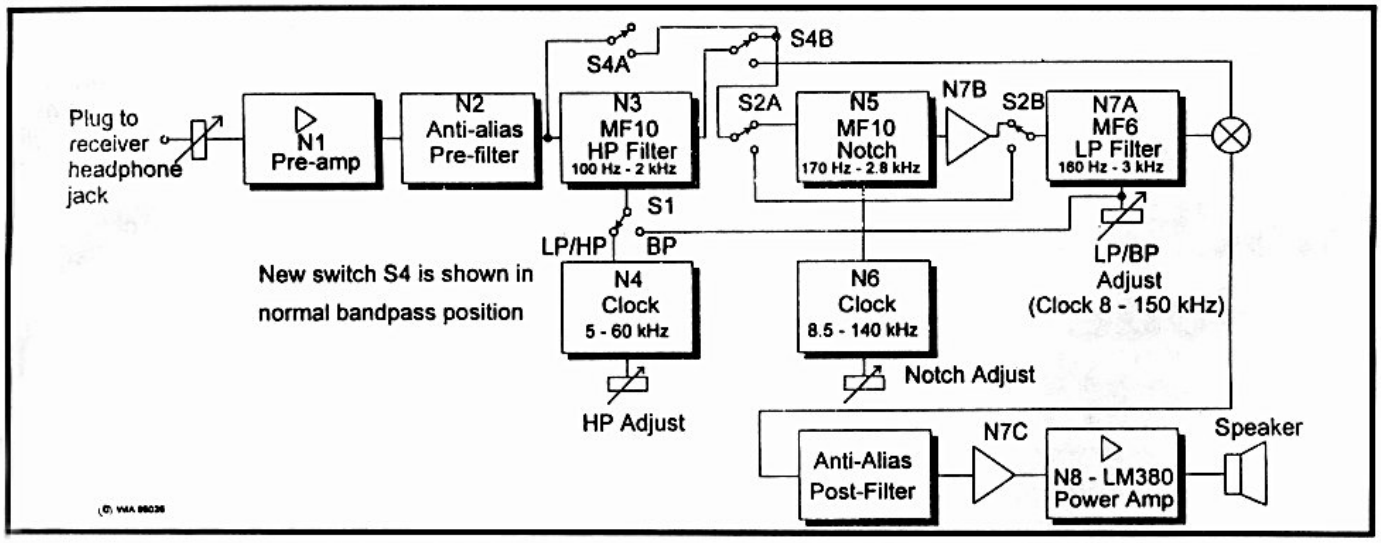

Figure 3 — Block diagram of the Audio Filter Unit with the addition of switch S4 to enable the Band Reject function.

For all other modes of operation, such as wide bandpass, narrow bandpass, and notch (as described in my previous article), switch S4 is returned to the normal position.

Some Observations

It is interesting to observe the effects on speech intelligibility when part of the middle of the speech frequency band is taken out. Inserting the 100 Hz bandwidth notch has no effect and you can't detect that it has been switched in. Taking out a large slice of the band alters the speech quality, as one would expect. However, I have observed that, if the rejected band is between around 500 Hz to 1.5 kHz, quite good intelligibility and tonal balance is retained. Loss of intelligibility and change of tonal balance seems to really occur when frequencies are cut below 500 Hz or above 1.5 kHz. It seems that if speech is troubled by interference concentrated within the frequency range of 500 to 1500 Hz, the interference can be reduced, without loss of intelligibility, by rejecting this part of the band.

Another consideration is a speech signal received in the presence of broadband noise which spreads right across the audio spectrum. The level of noise can be reduced by restricting the audio bandwidth up to a point, but intelligibility is reduced when low frequencies are cut above 200 Hz or high frequencies are cut below 2.5 kHz. As an alternative, one might consider cutting between 500 and 1500 Hz and I have tried this on a number of noisy signals. Whilst the effect is not dramatic, it can give a few dB of signal to noise improvement whilst still retaining reasonable intelligibility and tonal balance.

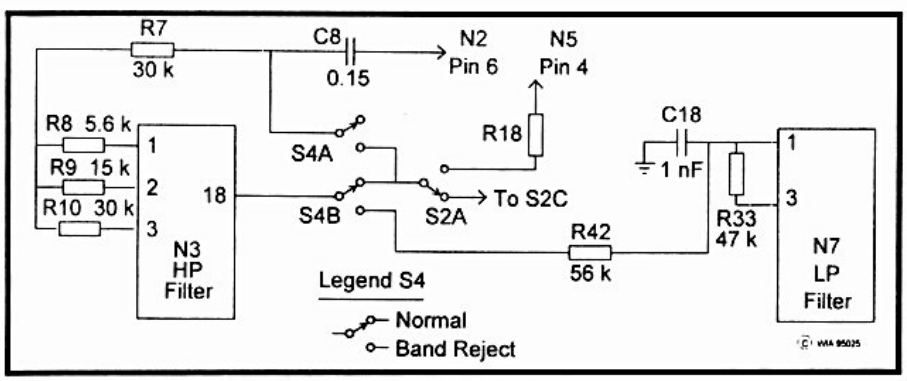

Figure 4 — Changes to the original circuit to include the Band Reject function.
Delete the link between N3-18 and S2A.
Add Switch S4 (DPDT) and Resistor R42 (56 k).
Also replace R17 (10 k), not shown, with R17 (4.7 k).

On a slightly different subject, there are various ways of processing speech into a transmitter to improve the effective speech power. Speech clipping and speech compression are two well used techniques. I now wonder whether a reduction of frequency components in the 500 to 1500 Hz range would also be worthwhile. This would allow an increase in power of frequency components which are more critical in determining intelligibility and tonal balance. This gets away from the subject in hand concerning filtering of received audio but it is an interesting idea leading from the band reject tests on received speech.

Conclusion

A simple modification has been added to the audio filter described in a previous issue of *Amateur Radio.* Switching in parallel operation of the HP and LP filters allows them to be used in an adjustable band reject mode.

Some tests using the band reject mode seem to indicate that a band of frequencies in the range of 500 to 1500 Hz can be taken out of a speech signal whilst still retaining a reasonable intelligibility and tonal balance. This is a characteristic of speech which can be useful in improving intelligibility in the presence of an interfering signal or noise in this part of the audio spectrum.

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Novice Notes

*Peter Parker VK1PK**

This popular column has re-appeared in *Amateur Radio* magazine following comment that the magazine contained little information specifically for newcomers to amateur radio. This month I will talk about receivers.

Whatever your amateur radio interest, you are going to need a receiver. Whether part of a transceiver or a stand-alone unit, a good receiver is essential to enjoy amateur radio. If you do not have a receiver, you need to build or buy one covering the bands on which you hope to operate. This article will outline the basic types of receivers and the advantages and limitations. Then, in part two, the factors that make a receiver good will be described.

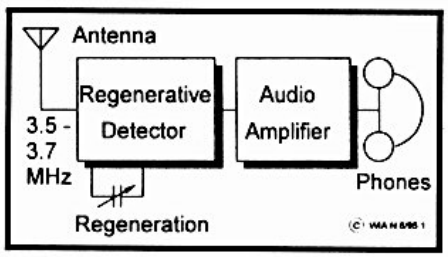

Figure 1 — Regenerative receiver.

Figure 1 shows a block diagram of a regenerative receiver. This is the simplest practical receiver for HF amateur band reception. It consists of two stages, a regenerative detector and an audio amplifier. The function of the detector is to convert Radio Frequency (RF) signals to Audio Frequencies (AF). The audio amplifier increases their strength so that they can be heard in a pair of headphones.

Regenerative receivers include a control to vary the degree of positive feedback. More feedback means the receiver can hear weaker signals, but increasing the feedback past a certain point will produce a howling noise. This indicates the detector has gone into oscillation, and may cause interference to other radio users. For this reason, many regenerative receivers include a radio frequency amplifier to isolate the antenna from the regenerative detector. Positive feedback in an oscillating regenerative receiver is analogous to a howling PA system; move the microphone away from the speaker (back off the regeneration control) and the feedback will disappear.

A regenerative receiver is fun to build and is capable of receiving many long distance voice and Morse code transmissions. It does have its limitations, however, and is not recommended for serious operating. Limitations include poor strong-signal performance, frequency drift and an inability to separate signals in a crowded band.

The direct conversion receiver of Figure 2 provides improved performance, is quite simple to build, and can be incorporated as part of a Morse and/or voice transceiver. It includes a separate local oscillator tuned to the received frequency and a product detector to convert the received signal to audio. Most of the receiver's gain is in the audio stages. Unlike the regenerative receiver, DC sets do not receive AM transmissions at all well. The almost universal use of SSB on our HF bands means this is not a serious limitation.

To separate signals properly, a good DC receiver needs sharp cutoff low pass audio filtering. Nevertheless, unless special techniques are employed, DC receivers are always less selective than superhet receivers because of the audio "image". I will not say more here, but this problem can be overcome with special circuitry.

A DC receiver is a fine beginner's project as it can be readily converted to a CW or voice transceiver. A basic DC receiver is simple to build and additional modules, such as buffers, audio filters and RF amplifiers can be added to enhance performance.

Superhet receivers are the most commonly used today, and are the norm in commercially-manufactured equipment. They are generally more complex than direct conversion receivers, but can be built by the constructor who has already experimented with other forms of receivers. Their main feature is the conversion of all incoming signals to a fixed frequency, which is referred to as the Intermediate Frequency (IF).

Much of the amplification in a superhet receiver occurs at the IF. Older receivers use a 455 kHz IF, while VHF receivers normally use 10.7 MHz. A common IF for homebrew receivers is 9 MHz. The use of crystal filters has made it possible to obtain high selectivity in modern superhet receivers. The choice of IF is critical to success of a superhet receiver. It is easier to amplify signals at lower frequencies, but a low frequency IF makes the receiver susceptible to reception of signals on frequencies other than that which is wanted.

Figure 3 shows a simple superhet tuned to 14 MHz. It has an IF of 9 MHz and includes a crystal filter for

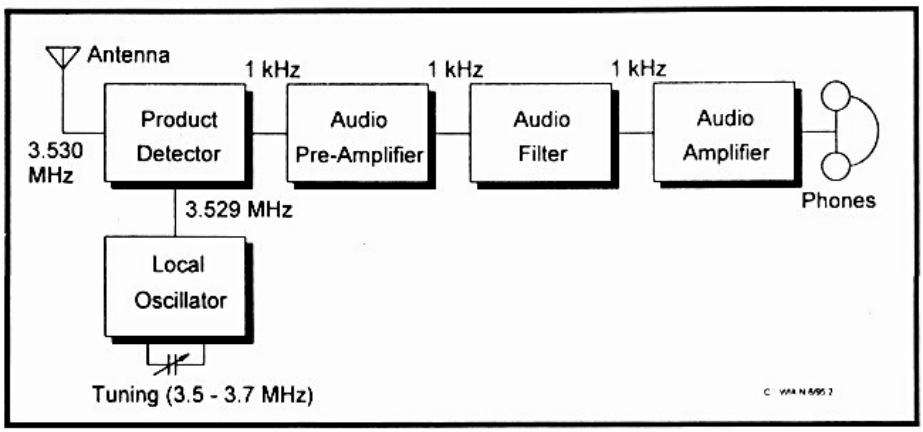

Figure 2 — Direct Conversion receiver.

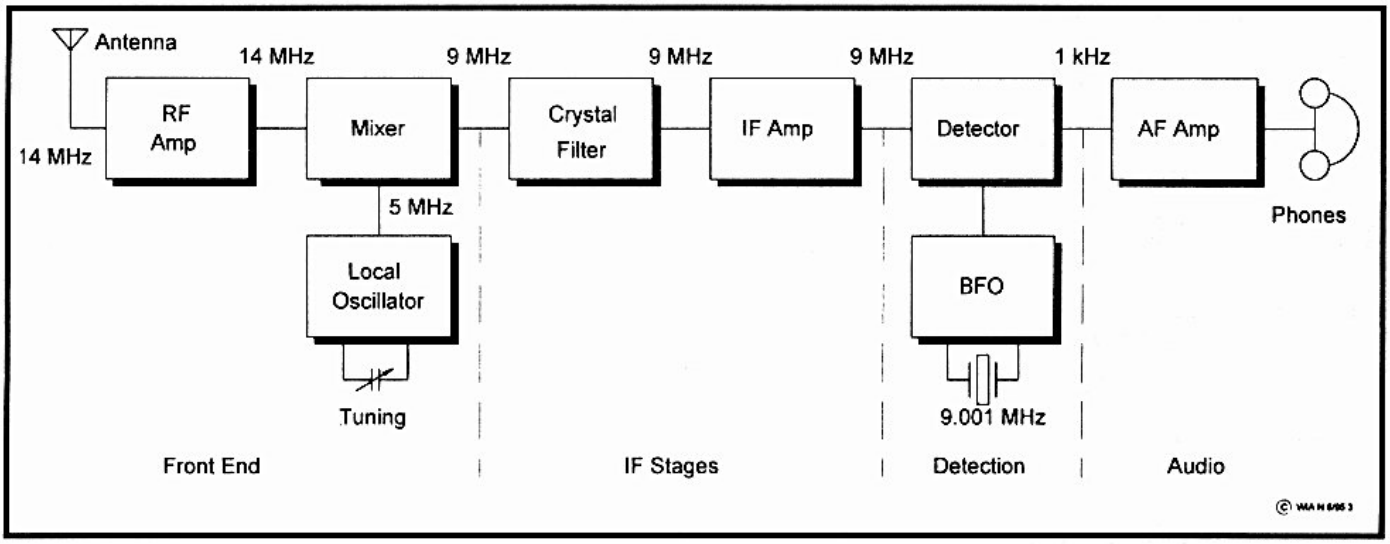

Figure 3 — Superhet receiver.

high selectivity. The local oscillator runs at 5 MHz. The 14 MHz signal at the antenna is converted to the 9 MHz IF in the mixer stage. This is achieved by mixing the incoming signal with the 5 MHz from the local oscillator to produce a difference equal to the IF. Hence, if we wished to listen to the beacons on 14.1 MHz, we would need to move the local oscillator to 5.1 MHz. The example described here includes a Beat Frequency Oscillator (BFO) to resolve CW and SSB signals.

As it features only one IF and one mixer, this receiver is of the single-conversion type. It is possible to build receivers with more than one mixer, but greater care in their design is necessary to minimise the reception of unwanted signals. Many commercial transceivers use multiple conversions to provide a general coverage receive facility.

With the correct detection and IF circuitry, superhet receivers can receive signals of any mode. It is also worth noting that superhet receivers lend themselves well to incorporation in SSB transceivers as the expensive crystal filter can be shared between the transmitter and the receiver.

That ends part one of this series. Join me in two months for part two. In the meantime, if you have any questions, please mail them to me at the address below.

7/1 Garran Place, Garran ACT 2605

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WIA News

Family Membership

The recent Federal Convention adopted a policy regarding a Family Membership grade which would allow households having three or more amateurs in the family to obtain membership of their Division at a considerable discount.

The Tasmanian Division first proposed that the Family Membership be looked into at the 1994 Federal Convention. The NZART has a Family Membership option.

There are a number of options available under which households could apply for Family Membership, but a general discount of 25% would apply. The principle behind it is that there would be a "cap" on the total amount of membership subscription from the one household, the total amount being decided by the individual Divisions. As Divisions have differing membership subscription rates, the maximum payable will vary from Division to Division. There would be only one copy of *Amateur Radio* magazine sent to each Family Membership household.

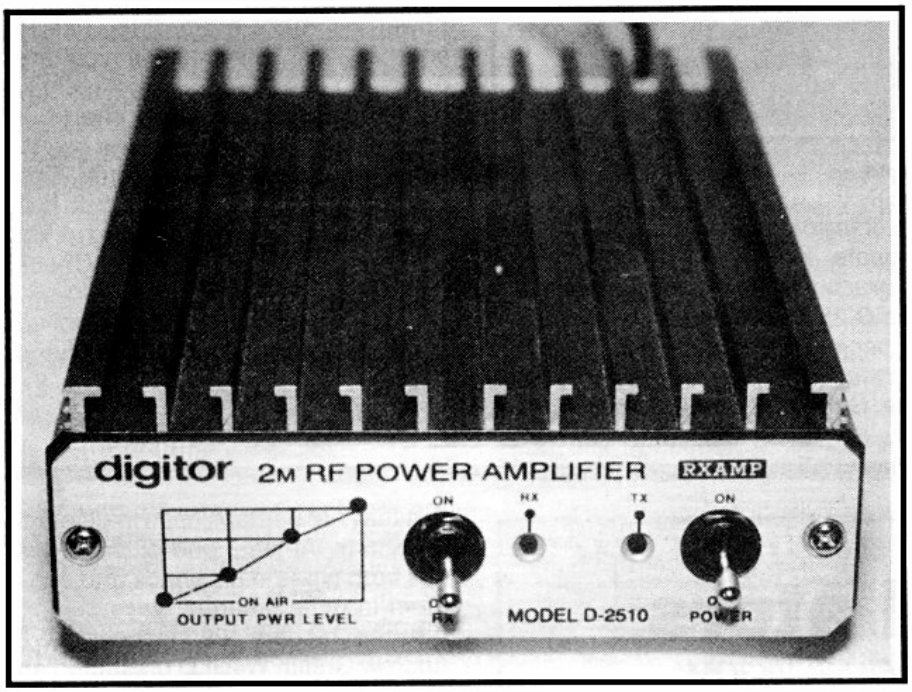
For a three-amateur household applying for Family Membership, one option is for one Full grade membership, one X-grade membership and one Student membership. Or, it might be a combination of two G-grade (concessional) memberships and one Student, for example. In households with more than three amateurs (or, say, three amateurs and an interested SWL), only the international and national representation components of a membership subscription may be charged ($2.90 at present) for each additional member. As an example (only), a household applying to the VK3, VK4 or VK5 Divisions, where three amateurs might want one Full, one X-grade and one Student membership, the present total amount would come to $174. The proposed capped Family Membership, with the 25% discount, would only have to pay $130.50, a saving of $43.50.

As a general rule, the policy is that a household applying for Family Membership must all have the same surname (but allowing for de-facto and special exceptions), they must live at the same address and only one copy of *Amateur Radio* is sent to the household. Further information may be obtained from your Division, NOT from the Federal Office.

■ Equipment Review

Dick Smith DIGITOR D-2510 2 m RF Power Amplifier

Reviewed by Ron Fisher VK3OM



Do you ever get the idea that the power output from your two metre hand held transceiver is just not quite enough? If so, this little power amplifier from Dick Smith Electronics might be just what you need. It can boost the output of your two watt hand held up to around 30 watts. This is so close to the 45/50 watt output of most current two metre mobile transceivers that you won't pick the difference.

Features

This amplifier is compact and light weight. The overall measurements are 100 mm wide, 36 mm high and 175 mm deep. Weight is just 550 g. The case is well designed with no sharp corners and there are four rubber feet on the bottom so there is little chance of it scratching other equipment. As well as providing a boost for your transmitted signal there is also a built in receiver pre-amp which gives about 13 dB of gain.

Input and output impedance is 50 ohms and standard SO-239 coaxial connectors are used. Transmit/receive switching is controlled via an RF sensing circuit so no external wiring is needed for operation of the amplifier. The D-2510 is designed for FM and CW operation only. It will not work on SSB and, with the relay switching used, it probably won't work with packet transmissions. Naturally, the unit operates from a 13.8 volt supply and requires about five amps. The attached DC lead is 720 mm long and is fused in the positive lead. A mobile mounting bracket is also included.

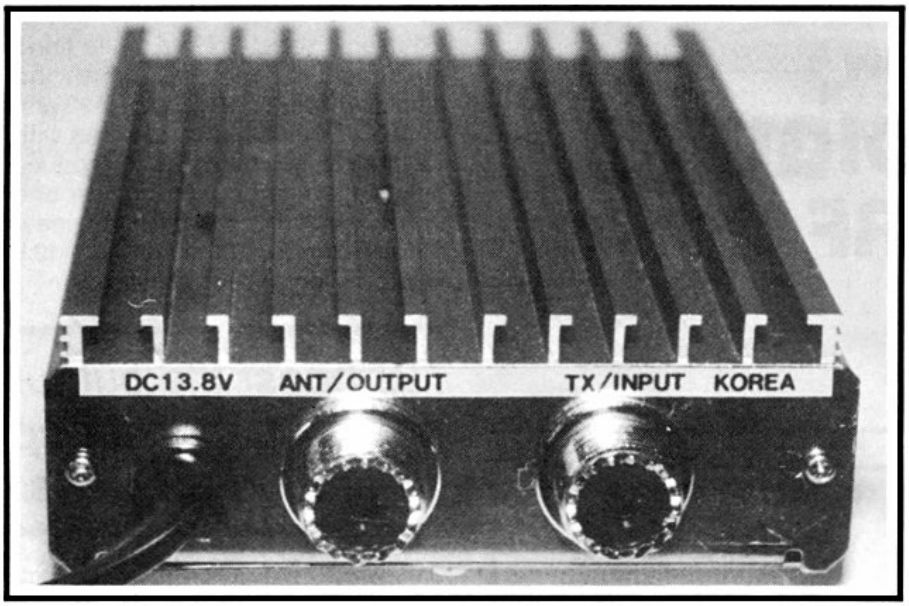
On Test

I used a variety of two metre hand held transceivers to drive the amplifier, including a Yaesu FT-23 and an FT-411. These were powered with 7.2 and 12 volt batteries to produce a typical range of output power and the following figures were obtained. All tests were carried out with 13.8 volts applied to the amplifier.

. . . boost the output of your handheld up to around 30 watts.

Drive Power	Output Power	Current Drain.
0.3 watt	11.0 watts	2.6 amps.
0.5 watt	21.5 watts	3.5 amps.
2.0 watts	30.0 watts	4.3 amps.
5.0 watts	37.0 watts	4.6 amps.

The input SWR to the amplifier was measured at 1.5:1 with the amp in operation and 1.6:1 in the through position (amplifier switched off).



Rear panel view of the compact amplifier.

Current drain with the pre-amp on but the amplifier off was 95 mA; and 110 mA with the amplifier on but with no drive.

The pre-amp was checked with several transceivers as noted above and was found to be very susceptible to interference from out of band signals. It is worth noting that the instruction sheet states, *"When using the D-2510 in crowded RF areas and especially when used with handheld transceivers, it is recommended that the GaAs FET be left switched off unless receiving a weak signal as this will result in less interference from strong out of band signals".*

Well, maybe out in the middle of the Simpson Desert it might be of use, but certainly nowhere near a big city. Unfortunately, no circuit diagram is supplied so it's hard to say what the pre-amp is and whether anything could be done to improve its performance.

Conclusions

No doubt about it, this is a very useful little amplifier. If you like to use your handheld in the car the extra power will make a big difference to your signals, especially if you are operating simplex.

The instruction sheet is short but covers most things quite well. However, there is no circuit. The catalogue price is $169.95, but has been on special at $149.95 and might still be available at this price. Check your local Dick Smith store.

Our review amplifier was supplied direct from the Dick Smith head office.

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■ Antennas

Random Radiators

*with Ron Cook VK3AFW and Ron Fisher VK3OM**

T-Match Antenna Tuners

Do you own and use an antenna tuner similar to the two illustrated in this column? Most commercial tuners these days use a "T" circuit. This even applies to most automatic tuners built into transceivers.

The basic circuit is simple. A series capacitor in, a series capacitor out, and a variable inductance to ground from the junction of the two capacitors (see Fig 1). Often a few fixed capacitors might be switched in parallel with the variable capacitors and the inductance might be tapped and switched, or it might be a variable rotary type.

Our good friend Graham Thornton VK3IY maintains that an "L" network will do everything that a "T" network will do (see his recent article, "An L of a Network", published over three issues of *Amateur Radio*), but, none-the-less, 90% of the commercial ATUs are "T" networks. We know that this is getting well away from our old favourite, the "Z" Match, but we feel that they are perhaps used in different situations. At least one of the Rons has both types in his shack and uses them in quite different ways.

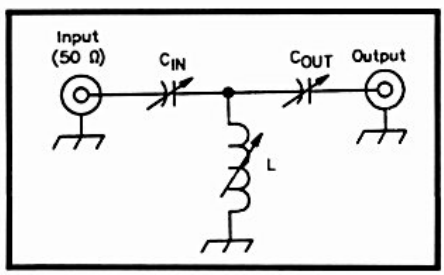

Fig 1 — Today's built-in and outboard antenna tuners most commonly use this generic circuit, the T network. *(Reprinted from QST, January 1995).*

In the January 1995 issue of *QST,* Andrew Griffith W4ULD presented an article on "Getting The Most Out Of Your T-Network Antenna Tuner". This is one of the best articles I have seen on just how to use an antenna tuner. After reading the article, our first thought was why don't we see this information in the instruction books that come with these tuners.

So, here are a few extracts from the article that we are sure you will find most interesting. First off, here is what Andrew says about the matching range of the "T" Match.

"For purely resistive loads, a T network with Figure 1's C_{in}, C_{out} (20 to 240 pF) and L (adjustable from 0.1 to 35 μH) values can match loads of about 10 ohms to 3 kilohms from 160 through 15 metres. At 10 and 12 metres the range narrows to about 10 ohms to 1.5 kilohms because C_{in} and C_{out} cannot be adjusted to less than 20 pF. When the load impedance to

be transformed is reactive, the matching range narrows. Even with reactance present, very few cases should occur in which the antenna cannot be matched with proper tuning technique."

Andrew then explains that the "T" match is a high-pass network and therefore does not attenuate harmonics to any extent. As the harmonic attenuation of modern HF transceivers is usually very good this is not a detrimental factor.

An important consideration with any antenna tuner is power loss and power limitations. Back to Andrew.

"Because tuner components are not 100% efficient, some of the RF power applied to a tuner's input turns into heat instead of showing up at the tuner's output. It's often said that these losses are "not worth worrying about". The truth of this statement depends on how much power your tuner can safely dissipate and how much loss you want to worry about. Power loss in a tuner occurs mostly in the inductance and is inversely proportional to the inductor's quality factor (Q) — the higher an inductor's Q. the lower its loss".

"Losses can also occur in a tuner's connections and balun (if used), but let's neglect these additional losses and assume that the tuner's inductor is good quality, with a Q of 200. A typical tuner task is to extend the range of a dipole over an entire band. Curve "C" of Fig 2 shows the tuner loss for this situation. At 40 through 10 metres the loss is less than 0.1 dB; that is 2.3%. At 160 metres, the loss rises to about 0.32 dB, or about 7%. Even a purist might agree that a loss this low is "not worth worrying about", but in saying so, we'd be assuming that the tuner components doing the "lossing" can safely dissipate 7% of the power applied. Seven percent of 100 watts is 7 watts; 7% of 400 watts is 28 watts. Depending on your transmitter power and your tuner's loss and dissipation capability, any decibel of tuner loss may be worth worrying about!".

"At any frequency, T-network loss goes up as the load impedance goes down. The worst case occurs at 160 metres where power losses of over 20% can occur even though the tuner is adjusted for maximum efficiency. In the T-network, the loss is also proportional to tuning sharpness (the sharper the tuning, the higher the loss). Low load impedances don't just cause high losses; they also cause relatively high voltages to appear across the network's capacitors."

"Practical T-Network Tips

What I have covered so far about loss and capacitor flash-over suggests two practical hints for T-networks with values like those of Fig 1:

- *To achieve the highest possible efficiency at a given impedance transformation, tune the network with the highest output capacitance that allows a match.*
- *When matching loads of less than 25 ohms on 80 metres and 160 metres, you may have to reduce your output power to reduce tuner heating or to keep it from arcing. With loads like this, you may not be able to use a legal limit amplifier even with a tuner specified to handle 400 watts."*

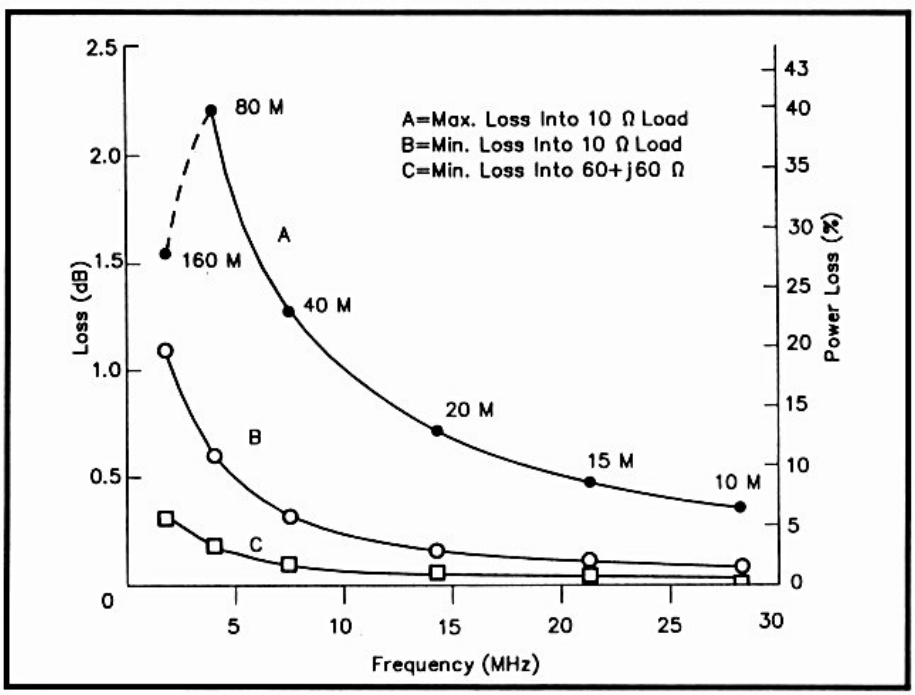

Fig 2 — How lossy can a T network be? Curves A and B show the Fig 1 network's maximum and minimum losses when transferring a 10+*j*0 Ω load to 50+*j*0 Ω. Curve C shows a network's minimum loss when matching a 50 Ω antenna slightly off resonance (60+*j*60 Ω). Depending on the transmitter power and tuner type involved, even a network loss on the order of 0.3 dB can cause tuner components to overheat or fail. *(Graph by W4ULD, reprinted from QST, January 1995).*

A Tried and True Tuning Technique

The only disadvantage of a tapped inductor T network is that its limited inductance resolution may not let you set C_{out} to its maximum possible value at match. Set C_{in} and C_{out} to mid scale. Select an inductance switch position and rotate the C_{out} through its range to look for an SWR dip. The dip may be very slight. If you don't find a dip set the inductance to another position and repeat the adjustment of C_{out}.

When you find a dip, adjust C_{in} for minimum SWR. Inch C_{out} in one direction or the other and redip with C_{in}. If the SWR is lower now than it was with the previous C_{out} setting, inch C_{out} in the same direction until you obtain a 1:1 SWR. In some cases an SWR dip can be obtained with two inductance settings. Chose the setting with the lower inductance to get a larger output capacitance.

So there it is. The main points are to tune for maximum capacity in the output capacitor, and watch out for heating when using the tuner on frequencies lower than 40 metres when matching into low load impedances.

Trap Tri-Band Beams — How Good Are They?

One of us has had a feeling for some time now that many trap tri-band beams don't deliver the gain that is often claimed for them. In fact, do they deliver any gain at all compared to a dipole?

As an example, one of the Rons has just replaced a three element monoband 20 metre Yagi with a four element trap beam. The printed specification for the trap beam quotes a gain of 10.1 dB. Sounds a bit high?

When working into Europe on long path, the three element monobander was neck and neck with a four element monobander. Most reports indicated that they were the same with a very few giving the four element beam a slight advantage. The four element is always 6 to 8 dB better than the trap beam which, to our way of thinking, gives the trap antenna maybe two dB gain at the most.

Perhaps some tri-banders are better than others. Or are they? What do you think? More on this subject in the near future.

See you all in a couple of months. So it's goodbye from me and goodbye from him.

The two Rons
**C/o PO Box 2175, Caulfield Junction, VIC 3161*

ar

Technical Abstracts

*Gil Sones VK3AUI**

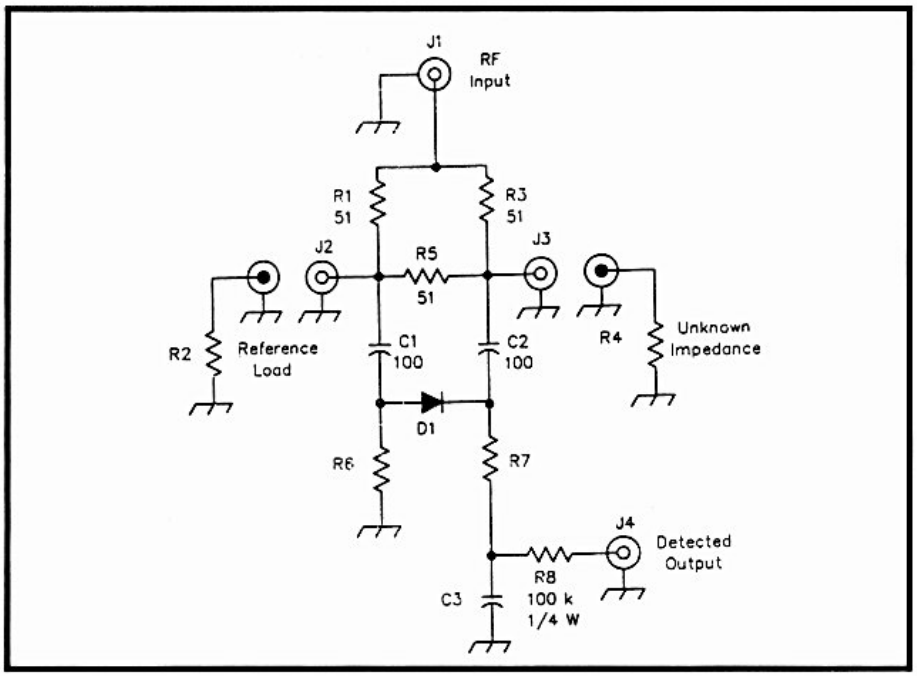

Fig 1 — VSWR Bridge Circuit Diagram — R6 and R7 are 10 k to 15 k. C3 is non critical and any chip cap from 100 pF to 0.01 mF will do.

UHF+ VSWR Bridge

Measuring VSWR at UHF and Microwave frequencies can be a problem as most amateur equipment does not operate at these frequencies. The other problem is in low power circuits or even measuring VSWR out of the amateur band. A simple resistive VSWR bridge can be used with either a low power source or even a signal generator. A suitable design was published in the February 1995 issue of *QEX* by Paul Wade N1BWT.

The design uses a small circuit board to mount chip resistors and capacitors. The impedance is preserved by using striplines on the circuit board for the RF connections. The design given worked up to the 2304 MHz band and was usable on the 3456 MHz band.

The circuit is shown in Fig 1. Resistors are chip types with the exception of R8 which is a 1/4 watt type. The capacitors are all chip types. The diode detector is a small surface mount microwave mixer diode.

The circuit board used was 1/32 inch Teflon and the etching pattern is shown in Fig 2. However, if the line widths are adjusted, G10 fibreglass could be used but the upper frequency performance may be affected. The whole bridge was enclosed in a box made from an offcut of waveguide. However, a suitable enclosure could be made from hobby brass. The placement of components is shown in Fig 3.

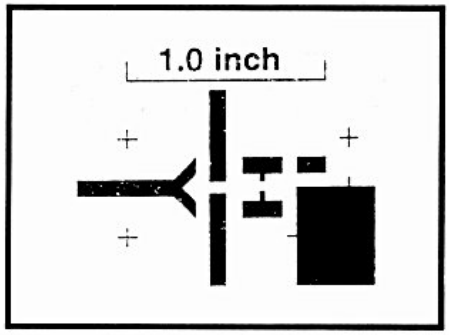

Fig 2 — PCB Etching Pattern for 1/32 inch Teflon Board.

The original used SMA connectors for the RF connections but any suitable connectors could be used. To maximise the upper frequency performance, some attention should be paid to the connection of the connectors to the PCB so as to minimise the impedance discontinuity.

In operation, a modulated signal is applied to the bridge and an audio millivoltmeter is used to measure the detected output. The bridge should balance with 50 ohm terminations on both ports. The degree of unbalance when measuring is an indication of the SWR. Infinite SWR can be used as a calibration by connecting a coaxial short circuit to the unknown port.

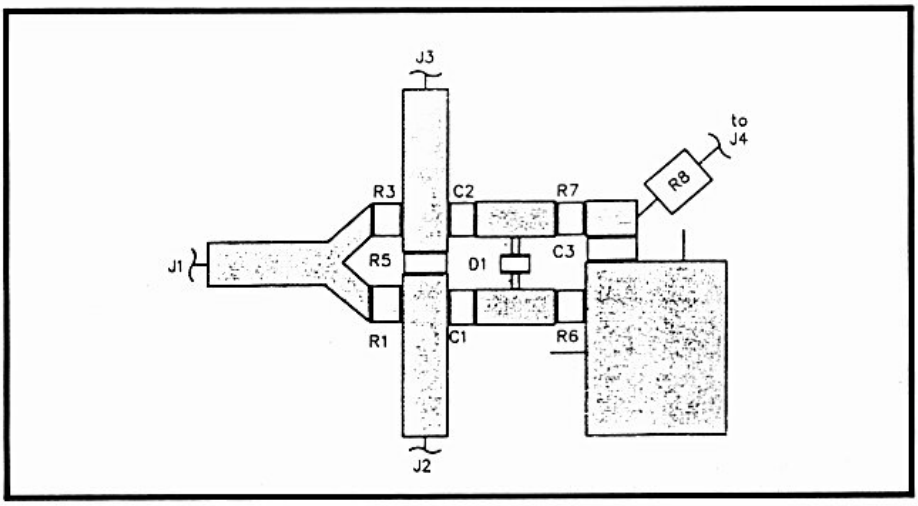

Fig 3 — Component Placement Diagram.

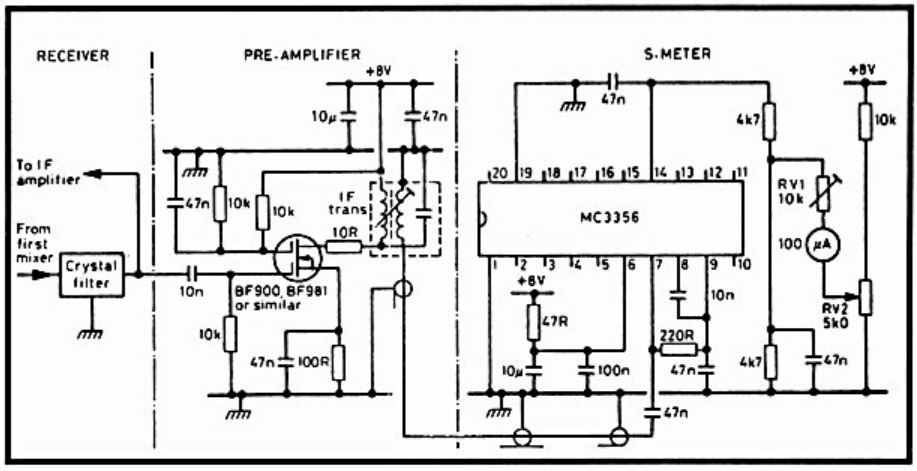

Fig 4 — dB Linear S Meter Circuit.

If you do not have an audio millivoltmeter then an output meter with an audio amplifier will do.

The same sort of bridge can be used on HF with a low power source or a signal generator as the source. For HF, ordinary 1/4 watt resistors would be adequate. However, the use of chip components provides the wider frequency coverage.

Mention was made in the article that PC boards were available from Down East Microwave which is a well known supplier of No Tune kits and boards. The address of Down East appears to be changing so check a recent US magazine for their current address. The chips would be available from suppliers such as Daycom in Huntingdale, Victoria or Truscott Electronics in Croydon, Victoria. Another source would be the VK5 component service.

dB Linear S Meter

The usual S meter is rather arbitrarily calibrated. However, a circuit which can provide a dB linear reading over a wide range of input signals appeared in the "Eurotek" column of Erwin David G4LQI in the June 1992 issue of *Radio Communications*. The design originally was described by Erich Zimmerman HB9MIN in the February 1992 issue of *Old Man*.

The circuit is shown in Fig 4. The integrated circuit is a Motorola MC3556 which provides a signal strength output function. The current delivered is proportional to the RF input. The function is shown in Fig 5 and in Fig 6. The function is logarithmic and so the meter can have a linear scale calibrated in dB.

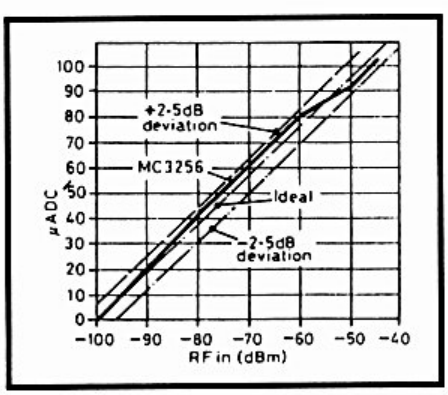

Fig 5 — Measured deviation from linearity of the MC3356P in Fig 4.

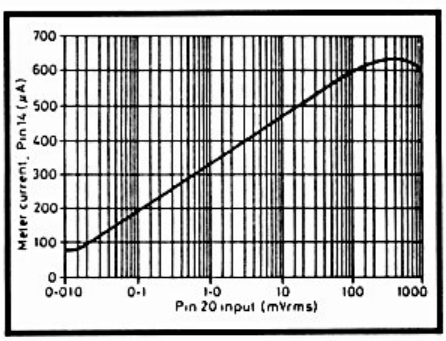

Fig 6 — Meter Current versus Signal Input from the Motorola MC3356 data sheet.

An isolation amplifier allows you to pick off the signal after the filter. The stages ahead of the filter must not be AGC controlled. The IC can be used with any IF from 5 MHz to 22 MHz. The linear range is 70 dB at 10.7 MHz and is 58 dB at 21.4 MHz which should provide an adequate range for giving meaningful signal reports.

C/o PO Box 2175, Caulfield Junction VIC 3161

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WIA

Changes in Federal WIA

The Federal Council of the WIA voted at the Federal Convention, held over the weekend of 29-30 April, to amend the Articles of Association to change its structure.

The Federal organisation, simply known as The Wireless Institute of Australia, is a public company, with the seven state Divisions being the only members of the company. The Divisions appoint a Federal Councillor to represent them at company meetings, known as Federal Conventions. Each Division, through its Federal Councillor, has one vote.

Being a company, the Federal WIA must have directors, who are collectively called the Executive. Their role under Corporations Law and the Articles of Association is to oversee the operation of the company, which principally involves the activities conducted by the Federal Office in Melbourne. Effectively, the Executive is the Board of Directors of the Federal organisation.

The Federal Council's role is one of determining Institute policy in matters pertaining to the Institute, such as how the Federal budget is spent, as well as issues for the benefit of the hobby of amateur radio, including such things as, for example, liaison with the Spectrum Management Agency over amateur frequencies and licence conditions, etc.

Some five years ago, the Federal Council merged the roles of Councillors and Executive, having the seven Federal Councillors appointed to the Executive, in addition to a number of other Executive members, the Federal President being Chairman of the Executive as well as Chairman of the Council, as had always been the case. In 1993, the Council executed a policy to limit the members of Executive to just the seven Federal Councillors. Federal Councillors then acted in a dual role, wearing "two hats", the intention being that the management of the Federal organisation then lay entirely with the "Board", as it was then called, in the belief that the Council's and the Board's views and interests did not, and were unlikely, to differ. This action was taken pending a complete revision of the Institute's Articles, which was then in progress.

At this year's Federal Convention, which is effectively the annual general meeting of the company, the Federal Council voted to change the Articles and separate the

Council and the Executive, and to reduce the number of Executive to three, in addition to the Federal President, making a total of four only, where previously the Articles provided for ten (nine, plus the President).

The Council formed the view that the arrangement of the past two years was unworkable, with everyone wearing "two hats", and that members of Council/ Executive had to make decisions which conflicted with individual Councillor's Division's views. In addition, some confusion had arisen among Divisions, as well as Division's members, in the past as to the roles of Council and Executive — just who was running what. There had been misinformed opinions expressed about "tails wagging dogs", when "tail" and "dog" were effectively one and the same.

The general view among Divisions is that the Council is the supreme policy-making and management body of the Federal organisation. The Council is where Divisions have their democratic say and vote on any and all issues regarding the Institute and its activities. The Corporations Law prevents members of the Executive "representing" their Division's views in Executive (or Board) meetings as such may conflict with the interests of the Federal organisation as a company.

Legal advice obtained before the Federal Convention confirmed that the Council, being the members of the company (equivalent to shareholders in other public companies), could run the company's affairs by means of decisions made in general meetings, that is, a Federal Convention or Extraordinary Federal Convention. This is the intent of the changes to the Articles. The four members of the Executive are to fulfil the statutory requirements of the Corporations Law and any lawful instructions resulting from Council decisions.

However, the changes are subject to being accepted by the Australian Securities Commission (ASC) and will not come into effect until the Institute's application is approved.

For the time being, Council voted to maintain the present situation regarding Councillors and members of Executive, as previously elected. It is not known how long the ASC will take to advise the Institute regarding the application to amend the Articles, which was submitted the week following the Federal Convention.

■ Book Review

In Marconi's Footsteps Early Radio

By Peter R Jensen VK2AQJ, G4GZT
Published by Kangaroo Press
ISBN 0 86417 607 4
Reviewed by Bill Rice VK3ABP

This impressive 176 page hard-cover volume was published in 1994 to coincide, for some years to come, with the centenary of the period 1894 to 1920, during which Guglielmo Marconi laid the foundations for radio communication.

Marconi was born in Italy in 1874, but moved to England in 1896 in the expectation, eventually fulfilled, of finding more interest than in Italy in his embryonic communication system. By the time he died in 1937, his name was familiar world-wide.

Peter Jensen, who is an architect and town-planner by profession, has obviously spent years on this "labour of love" to give Marconi's centenary the attention it fully deserves. The book is unique in that it consists of two sections with many cross references, one being essentially historical and the other giving in fine detail all necessary information to reproduce actual working models of early "wireless" hardware.

Notable items so described are the induction coil (Ruhmkorff, not Rhumkorff, incidentally), the coherer detector, various tuning devices, and a 1920s era crystal receiver. There is a caution about the potential of a working induction coil to produce interference to most present day communications. It might perhaps have been understated that, even though the coil may be able to generate 200 kV, it simply must not be used (except perhaps in a screened room!).

Regrettably, the book contains a number of typographical and/or spelling errors. It would seem not to have had quite as thorough a proof-reading as we try to apply to *Amateur Radio!* Nevertheless, it is a fascinating dissertation on the life and times of one who has been called "the world's first radio amateur". The author, Peter Jensen, was interviewed on the ABC Science Show on 1 April 1995, and also heard was an actual 1930s recording of the voice of Marconi himself.

The book is already listed at your Divisional Bookshop for $49.95, and is highly recommended.

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Help stamp out stolen equipment — keep a record of all your equipment serial numbers in a safe place.

WIA FEDERAL 1994 ANNUAL REPORTS

These are the 1994 annual reports adopted by the Federal Council of the WIA at the 1995 Annual Federal Convention.

FEDERAL PRESIDENT

Each year one looks back to see if any significant events took place so that when a reader has finished the report it will be apparent that the company is moving with the times and will pay a dividend. The WIA is a non-profit company with a paid office staff and therein is the difference.

Representatives from all divisions met several times in the past 12 months to promote Amateur Radio and steer it through the labyrinth of problems encountered.

EXECUTIVE MATTERS

Bruce Thorne resigned after a short period and Donna Reilly stepped into the breach, carrying on the duties till the appointment of Lewis Badge was completed. So the office staff experienced an upheaval but nevertheless their functionality and performance remained high.

Barry Wilton shouldered the responsibility and load in the process of replacing Bruce Thorne. Thanks are extended to him in giving the Councillors and Directors the short list of candidates for the Secretary's position, enabling the weekend meeting to make a decision on employing Lewis Badge.

In 1994 it was reported that the Articles of Association were nearing completion. 1995 and that goal is still to be achieved with work still proceeding. Obtaining agreement from all concerned, and arranging legal technicalities is very time consuming.

MEMBERSHIP

The overall view is one of disappointment as the attraction to join, or even to remain a member of the WIA, still appears a problem. When it is considered that the benefits of membership form a long list, then the prospective member or members say "What do I get for membership?". The intangibles are just that, and the questioner wants something in the hand. AR is great, QSL OK, then.....

With so many options available in the hobby field, amateur radio does a very poor job in selling itself. So what is the answer?

AR MAGAZINE

Continues to be the "tangible" of membership. The organisation and effort expended with its production is a great unknown to the membership. Small praise is ever received but let an issue be late, and people become agitated to say the least. So far, the magazine's lateness has not been the fault of the WIA's production group.

INTERNATIONAL

The Region 3 meeting took place in Singapore, with the WIA being well represented. The Region 3 IARU report covers this meeting in depth. An International Beacon Co-ordinator for Region 3 has been appointed and his first efforts will be to place a new HF Beacon in VK, probably VK6 Perth area. Suitable locations are difficult to find, as most operators do not want it near their locations for obvious reasons.

EXAMINATIONS

This area of WIA operations, run efficiently from the office, continues to play a most important role in amateur radio. Stats show that the numbers seeking exams has declined and the pass rate is variable. It is of concern that the costs of sitting exams may be a deterrent to people. It must be pointed out that many appear to fail due to lack of preparation, and then have to pay again to sit the exam.

During 1994 VK4 proposed that the exam service be moved to Queensland and that division take on the work. However, the memorandum of understanding has yet to be completed between the Federal WIA and SMA. In the meantime after the initial proposal was agreed to, several divisions re assessed their position and want to open the discussions again on the move to VK4.

FEES/SMA/WIA

This area of concern is reported fully elsewhere.

Many thanks are recorded here to the many volunteers who manage the various aspects of Amateur Radio. To the WIA office staff, *Amateur Radio* magazine editor and his publication group and the Federal Coordinators whose efforts are very much appreciated.

AMSAT	G RATCLIFF	VK5AGR
AWARDS	J KELLEHER	VK3DP
CONTEST MANAGER	P NESBIT	VK3APN
EDUCATION	B EDMONDS	VK3KT
FTAC	J MARTIN	VK3KWA
HISTORIAN	J EDMONDS	VK3AFU
IARU	K OLDS	VK1OK
INT TRAVEL HOST EXCH	A NALLAWALLA	VK3CIT
INTRUDER WATCH	G LOVEDAY	VK4KAL
MEDIA LIAISON	R HARRISON	VK2ZRH
QSL MANAGER (VK0/9)	N PENFOLD	VK6NE
STANDARDS	R HARRISON	VK2ZRH
VIDEOTAPES	B GODFREY	VK4BOB
INT REG AND RSG	D WARDLAW	VK3ADW
WICEN	L BAKER	VK3TP

N Penfold VK6NE
President

ALARA

The Australian Ladies' Amateur Radio Association has had a successful year with membership holding about the same number as the previous year. Contest numbers were down slightly but propagation plays a major part in that. Very good publicity is being achieved with our column in *Amateur Radio* magazine.

During the year a long time member and a licensed operator of 64 years, Austine VK3YL, became a Silent Key.

ALARA has been represented at the Gosford Field Day and the Riverina Convention at Renmark. Plans are well in hand for the next ALARAMEET to be held in VK6 in September 1996. Alterations to the Committee have been Bev VK4NBC as our second vice-president, Gwen VK3DYL became our sponsorship secretary, our new Publicity Officer and VK4 Representative is Sally VK4SHE, and our Minute Secretary is Nora VK5NYD.

Lunches have continued to be held in various States and the VK4s had a weekend gathering.

1994/1995 Committee:

President	Christine Taylor	VK5CTY
Immediate Past President	Maria McLeod	VK5BMT
First Vice-President	Judy Atkins	VK3AGC
Second Vice-President	Bev Clayton	VK4NBC
Secretary	Bron Brown	VK3DYF
Treasurer		
Souvenir Custodian	Margaret Schwerin	VK4AOE
Minute Secretary	Nora Young	VK5NYD
Publicity Officer	Sally Grattidge	VK4SHE
Awards Custodian	Jessie Buchanan	VK3VAN
Historian/Contest Man.	Marilyn Syme	VK3DMS
Librarian	Kim Wilson	VK3CYL
Sponsorship Secretary	Gwen Tilson	VK3DYL
Editor	Dorothy Bishop	VK2DDB

State Representatives:

VK1/2	Dorothy Bishop	VK2DDB
VK3	Bron Brown	VK3DYF
VK4	Sally Grattidge	VK4SHE
VK5/8	Meg Box	VK5AOV
VK6	Bev Hebiton	VK6DE
VK7	Helene Dowd	VK7HD

Bron Brown VK3DYF
Secretary

AMSAT

The number of amateur satellite operators has once again steadily increased during 1994 lured by the attraction to use the 9600 baud digital packet radio satellites such as UoSAT-OSCAR-22, KitSat-OSCAR-23 and KitSat-OSCAR-25. The 1200 baud digital PACSAT continue to have an ever increasing but small number of devotees.

With respect to the non-digital satellites there still continues to be a steady trickle of newcomers to amateur satellites who are more interested in using amateur satellites for CW or voice communications and have found great satisfaction in using the Russian Low Earth Orbit satellites like RS-10/11 and RS-12/13, AMSAT-OSCAR-21(RS-14) with its Digital Signal Processing (DSP) FM repeater and more recently RS-15 which was successfully launched on 26 December 1994. The highly elliptical orbit (Phase 3) satellites AMSAT-OSCAR-10 (AO-10) and AMSAT-OSCAR-13 (AO-13) still remain very popular as they provide almost complete global coverage once every 11 days or so. It is worth noting that there has been an upsurge in the number of stations experimenting with the Mode-S transponder (70 cm uplink and 2.4 GHz downlink), particularly in Western Australia.

The major international amateur satellite project during 1994 has been the building of the next Phase 3 satellite currently known as Phase 3D. The frame was manufactured in the US while the other various bits of electronics and hardware were manufactured in Germany, England, Hungary, South Africa, Japan and the US, to name a few. The launch of Phase 3D is expected to be sometime in the middle of 1996. In December 1994, the AMSAT Phase 3D Uplink and Downlink Bandplans were published by AMSAT-DL. Copies of these bandplans are available from AMSAT-Australia for a SASE but in summary there will be uplinks on 10, 21, 145, 435, 1268, 2400 and 5668 MHz and downlinks on 29, 145, 435, 2400, 10451 and 24048 MHz. Also I should mention that I have accepted the task of being one of the Command Stations for Phase-3D and plan to attend a Command Station seminar in either Germany or the US later in 1995 or in early 1996.

Many Australian amateurs continue to communicate with the Russian Cosmonauts onboard MIR on both voice and packet radio. Maggie Iaquinto VK3CFI continues to arrange both voice and packet radio contacts with the Soviet space station MIR for secondary school students. Thanks must go to Maggie for her untiring efforts in this endeavour.

In 1994 Australian schools were once again given the opportunity to talk to the astronauts aboard the space shuttles which carried SAREX (Shuttle Amateur Radio EXperiment). Australian schools are again invited to send a SASE to AMSAT-Australia C/- GPO Box 2141, Adelaide SA 5001 if they would like to have students contact astronauts onboard future Shuttle SAREX missions carrying amateur radio. Such contacts can be either direct on 2 m or via a phone link to my QTH. The SAREX experiment not only provides the school contacts but allows any amateur with a 2 m transceiver to talk to the Astronauts or work the SAREX robot Terminal Node Controller (TNC).

During November 1994, AMSAT-OSCAR-21 (RS-14) with its Digital Signal Processing (DSP) FM repeater was switched off when the Russian government

decided as a cost cutting measure to switch off the primary spacecraft INFORMATOR-1.

Throughout 1994 Bill Magnusson VK3JT has again continued to keep the readers of *Amateur Radio* up to date with the timely material he has provided in his AMSAT-Australia column. Bill's efforts continue to generate a steady trickle of interest in the amateur satellite service. In 1994 I received over 1000 mail items requesting general information on amateur satellites and satellite tracking software. Also, the AMSAT-Australia monthly NEWSLETTER has increased its total number of subscribers (started in April of 1985) from 844 to 890 in 1994.

Finally, I would like to thank the WIA for its continued support of the amateur satellite service via the activities of AMSAT-Australia and ask that the 1994 Federal Convention recommend that the WIA continue to support AMSAT-Australia financially at the present level.

Graham Ratcliff
AMSAT-Australia National Coordinator

AWARDS

Achievements

Members have given written and verbal acceptance of the bi-annual DXCC listings. More members have been admitted to the WIA DXCC Roll of Honour. There has been a general upsurge of interest by overseas amateurs in the WIA Awards program. Transcription of DXCC additions and upgrades has been greatly speeded up by the introduction of more modern and innovative logging programs. The DXCC database has been well organised and amended quickly as alterations and additions have been received. The existing active members of WIA DXCC continue to support me, by sending upgrades at least twice per year.

Problems

Clubs: A survey carried out by one of my predecessors indicated that there were, in 1989, between 25 and 30 club stations actively operating Awards Nets. Recently, I requested information from any and all club stations still actively engaged in the issue of awards, with the promise that free publicity would be given through the pages of AR magazine. To my dismay, only four responded. Does this mean that at least 25 radio clubs have become defunct, or have they just "shut up shop" for the duration of the present solar cycle? Maybe more participation by Club stations in Contests would help to publicise their existence, and availability on bands other than 80 metres, and utilising varied modes. Needless to say, I have kept my end of the bargain, in the publishing of any and all details received. I hesitate to mention the word "apathy", but in this instance, it is clearly in existence.

To Federal Council: 1994 was a year of lost opportunities. It is my opinion that Australia as a whole should be publicised at every opportunity. With some exceptions, no positive action was taken at WIA level to support this theory. Some would say that Hervey Bay RC was being opportunistic in offering awards concerning the passage of whales. I openly support this club, because they are not only progressive, but are publicising their portion of Australia through amateur radio. Consider the level of activity if stations at WIA level showed interest in such occurrences as Australia Day, WPX Contesting, Moomba, Anzac Day, Queen's Birthday, VP Day, CQ WW Contesting, and maybe the Melbourne Cup.

It is my considered opinion that somebody should lead by example, and it might just as well be the WIA.

In conclusion, could I suggest that instead of applying for the use of VI and AX prefixes individually, that a "blanket" application be made every 12 months, for use in such instances as have been listed above. Such an action would raise activity over the entire Australasian region. I would indeed hate to have this great country referred to generally in the same manner as was recently done by our honourable Prime Minister.

John Kelleher VK3DP
Awards Manager

CONTESTS

The past year has been a period of relative stability for WIA contests, and I would sincerely like to thank the following WIA contest managers for their valued contributions:

John Martin VK3KWA Ross Hull & VHF/UHF Field Day

Phil Raynor VK1PJ John Moyle Field Day

Alek Petkovic VK6APK Remembrance Day Contest

Ray Milliken VK2SRM VK Novice

During the year, notable events include the introduction by John Martin VK3KWA of a new scoring system for the Ross Hull Contest, based on the best 100 QSOs. From all accounts this change has worked well, leading to an increase in activity and general revitalising of the contest. Well done John.

Another notable event was the appointment of Alek Petkovic VK6APK as the new RD Contest manager, replacing Neil Penfold VK6NE. On behalf of members and entrants I would like to thank Neil for the sterling service he has given over the last few years as RD Contest Manager, and wish him well in his future endeavours with the Institute.

Whilst on the subject of the RD Contest, judging from the many excellent comments and suggestions put forward by entrants over the past year, it is apparent that significant changes are needed in order to restore this contest to its former glory. I will shortly be discussing a number of options with the RD Contest Manager, Alek VK6APK, and hopefully we can come up with something which meets with members approval, and brings that traditional spark back into the Contest.

Finally, the wife of a recently deceased member has very kindly offered to sponsor a trophy for the VK/ZL DX CW Contest, in memory of her late husband who was a very keen, and highly respected, CW operator. Details are yet to be finalised, but if all goes well, the trophy will be available for the Contest later this year. I will advise further details in the column in due course.

Peter Nesbit, VK3APN
Federal Contest Coordinator

Education

The main activity in 1994 was the continuation of the work started in 1993 on the examination question banks. The Sub-Committee met for five to six hours almost every Monday evening of the year.

Early in the year it became apparent that both existing syllabuses were in need of revision and updating, so work on the questions was suspended until this revision was carried out. Discussions with the SMA established the areas where the emphasis needed to be changed. Drafts of the revised syllabuses were sent to the SMA in July. By the end of 1994 no formal response had been received from the SMA, but we did not carry out any active follow-up as further refinements became necessary as work on the questions progressed. It is considered that the AOCP/AOLCP theory syllabus is now ready for final discussions with the SMA.

By the end of 1994, draft copies of all sections of the AOCP/AOLCP bank had been circulated to the Divisions for comment, and a substantial response had been received. Questions which were amended as a result of the comments received began to circulate early in 1995.

It is expected that most of the work on the regulations bank and the Novice bank will be completed in 1995. The lack of progress on finalisation of the revised regulations has been disappointing, as the delay is holding up progress on the regulations bank.

I would like to extend the thanks of the Sub-Committee to all who have had input into the production of the banks. I cannot express too strongly my personal appreciation of the effort, interest and enthusiasm of the members of the Sub-Committee. There is no way this task could have been undertaken or progressed without the Monday meetings.

A highlight of 1994 was my attendance at the IARU Region 3 Conference in Singapore, where I was able to meet representatives of several other Societies, and discuss education matters with them. Several papers on examinations and devolution which I had drafted for the conference were appreciated by countries trying to achieve a similar system. The formal discussions on the harmonisation of amateur radio examinations and on proposals for assisting the establishment of amateur radio in developing countries were very stimulating. These fields will need input from the WIA for some years. Some correspondence is continuing with delegates from other countries.

The recommendations from my 1993 report with regard to the publication of the question banks still stand. In addition, I would like to recommend that, as the banks are completed, they be made available either free or for a nominal charge to any interested countries of Region 3.

Brenda Edmonds VK3KT
Education Co-ordinator

EXAM SERVICE

There was a dramatic drop in demand for examinations during 1994 as compared to 1993, however, it is anticipated that this will change when the new Novice Category is introduced by the SMA hopefully in the near future.

The income derived from Examinations was $13185 below budget and $13098 below actual income from 1993. In addition, although the Examination Service showed a loss of $2991 for 1994 the service still shows a surplus of $4560 since commencement in 1991.

Due to these circumstances some restructuring of the Examination Service in the Federal Office has been undertaken in order to offset the deficit. However, as it was apparently the intention of the Federal Body for the WIA Exam Service to be self supporting, there does not appear to be a cause for concern at this stage.

Among some of the events of 1994 for the WIA Exam Service was the review of the Memorandum of Understanding with the SMA. It is hoped that this will be concluded in the near future, which also will result in some further restructuring of the Examination Service.

In addition, the proposal from VK4 to take over administration of the WIA Exam Service is of concern. I trust this matter will be resolved soon as already the insecurity of the situation has resulted in the resignation of one Federal Office staff member. I wish to thank Chris Russell VK3ARZ for her valuable input and service to the WIA Examination Service and wish her good luck in her new position.

Donna Reilly
Manager

FEDERAL TECHNICAL ADVISORY COMMITTEE (FTAC)

Activities and Achievements

A major activity during the last year has been the preparation of material for submissions on our new licence conditions. Submissions were also prepared on the new SMA interference guidelines and proposed amateur allocation in the 190 kHz and 900 MHz bands. A submission for exclusive segments in each of our shared bands is also being prepared.

The beacon and repeater data base has been further updated and a revised policy and geographic allocation plan has been developed for beacons. A number of new beacons are in the planning stages at present. Draft guidelines for unattended transmitters, including repeaters and links, are almost complete.

There was an increase in the number of record claims. A number of claims for new state and national records, and two world records, were processed.

Problems

There are still problems in encouraging amateurs to abide by the national plans. A major reason appears to be that an increasing number of amateurs do not regard the WIA as relevant. There have also been problems in consultation on band planning and related matters due to a lack of responses from some Divisions.

Recommendations

That attention be given to improving communication and consultation processes, and restoring the WIA's standing in the eyes of Australian amateurs.

John Martin VK3KWA
Chairman

INTERNATIONAL AMATEUR RADIO UNION MONITORING SERVICE (IARUMS) — INTRUDER WATCH

Achievements: Early in the year the SMA through Quoin Ridge (VK7) suggested trying a database system, for the observer log sheets; this I gave some thought to, I said I would give it a go. Dave Thorne VK7MR sent me the program, based on PC-FILE5, called SMA WIA/WATCH. This move certainly speeded up the processing of log sheets. "We" had something like 156 notable intruders, representing X number [on log sheets] of about 1,361 loggings. This was further enhanced by the purchase of a fax machine, enabling speedy transfer of info to Hobart....one month via Canberra down to approx five minutes direct. Speed is the essence of success of Harmful Interference complaints to be sent to the IFRB. Now the SMA can send a copy to monitoring stations in each state for further ID's. May 94 saw the idea of targeting 6 intruders, for both observers & also SMA monitors; this proved to be a time saver, enabling more SMA time to be spent on our behalf. Following SMA's suggestion adopted SINPO and SINPFEMO in place of the more usual "S" meter reading. This is expressed by IARUMS as the preferred report system.

The database has been upgraded to only holding observations of about three months; many are only heard once (possibly come on again on another freq). Otherwise the system was getting "bogged down" with once only intruders.

During the past twelve months the relationship between myself and SMA, particularly Dave VK7MR, has been positive and extremely helpful, making the job much easier and interesting. Thanks Dave. The WIA seems to have taken a back seat, not so, although at times I could've wished for quicker notification re queries. We all tend to get things out of "kilter" at times.

Problems: The old one of insufficient observers Australia wide; we have good representation in VK4 and VK6. The other states are falling down on "having a go"! We want co-ords in VK2, 3, 8. VK5 and 7 have co-ords but a lack of interested amateurs on a regular basis. Most observers are "old-timers". Tom VK5TL has become SK recently, Tom was in IW from the start, I believe. Now who will step up in VK5, I wonder? I think maybe the modes tape scares them. This tape has been popular, but no results yet in the mail. It is after all a reference tape only, no need to learn it by "heart", just refer to it.

Recommendations: That Radio Clubs introduce IW to their members and appoint a club co-ord, each member to be given a couple of intruders to check out. In VK4 we have the Sunshine Coast ARC trying it. The co-ord joins the IW net, run by State co-ord VK4BTW on 3578 MHz, so novices can join in, on air Friday at 0700z. VK4KAL has standing skeds, Mondays on 21.1800 to ZL1CVK, at 0100z also weekends on 21.150 with VK6RO around 0430z. Please call in with your queries.

Conclusions: The Service is in reasonable shape, but the amateurs involved would be much happier if more positive effort was forthcoming. The SSARC is making good progress I believe with their experiment. I'm of the opinion that a similar plan of action is being undertaken in ZL. This may be the way to increase interest; time I guess will tell. "We" would like much more input from the southern states; they hear intruders OK — why don't they send them to me? At the moment I cannot see a lasting future for amateur radio in VK. Come on, PROVE ME WRONG. I wish to personally thank each observer for his efforts over these last 12 months. I look forward to the next.

A G Loveday VK4KAL
IARUMS Co-ordinator

IARU Region 3

1994 was a busy year on the IARU front, being the year in which the triennial IARU Region 3 conference was held in Singapore. Preparation for the conference began in May with the preparation of papers for consideration by the Federal Council prior to submission to the conference. The WIA was represented at the conference by Kevin Olds VK1OK, Gavan Berger VK1EB, Roger Harrison VK2ZRH, Brenda Edmonds VK3KT, John Aarsse VK4QA and Wally Watkins VK4DO. Brenda and Wally funded their own attendance at the conference while the remainder were funded by the WIA from the International Representation fund. Of the 25 societies that constitute Region 3, 18 were present in person while another three were represented by proxy.

The conference was held over five days in early September. A full report on the conference was published in the November issue of *Amateur Radio* magazine so this report will only include a summary of the major outcomes. Some of the major areas of discussion at the conference included:

The replacement of the old Promotion of Amateur Radio in Developing Countries group by the "Support of the Amateur Radio Service in Region 3" group, or STARS*** for short, to handle all the promotional and support activities necessary in all the countries and societies in the Region, regardless of their state of development.

Amateur Radio Direction Finding (ARDF) — the next Region 3 Championships will be held in Townsville.

HF and VHF Beacons, where an IARU Region 3 Beacon Co-ordinator position was established. At least one and probably two international time share HF beacons will be established in Australia, a part of a Regional and international program.

The conference saw the retirement of Masayoshi Fujioka JM1UXU, Region 3 Secretary after 12 years in the position — he will be missed. Keigo Komuro JA1KAB is the new Secretary. The election for the Board of Directors saw the election of Fred Johnson ZL2AMJ, Park Young-soon HL1IJM, David Rankin 9V1RH, Yoshiji Sekido JJ1OEY and Sangat Singh 9M2SS. Fred Johnson is the new Chairman of Directors. Our own David Wardlaw VK3ADW was not re-elected as a Director of Region 3 but continues to work on behalf of the IARU Administrative Council on the international scene.

One significant outcome of the conference for the WIA was the selection of the WIA to host the Year 2000 conference. Preparation has already begun for that conference.

In other areas, 1994 was the WIA's turn to host two delegates from NZART at our Federal Convention in May 1994. This continuing interchange between the two societies is of benefit to both societies as they strive to represent their members to their respective administrations.

On the wider international scene, the IARU Administrative Council continues to co-ordinate efforts at the international level to advance the hobby of amateur radio. With the move to more frequent, but more focussed international radio conferences, their work has increased and that increase is being reflected in the increasing range of issues which Region 3 is being called upon to consider.

The WIA effort at the international level could not be maintained without the funding available through the international representation levy component of the WIA fees.

Recommendation

I recommend to the Federal Council that the international levy component of subscriptions be maintained to continue the international work of the WIA.

Kevin Olds VK1OK
IARU Liaison Officer

INTERNATIONAL TRAVEL HOST EXCHANGE (ITHE)

The International Travel Host Exchange (ITHE) is a voluntary scheme administered by the American Radio Relay League (ARRL) wherein interested radio amateurs are able to meet or host fellow operators from other countries. Your name does not have to be on the list for you to take advantage of such hospitality, and you can do so when travelling around our own country. This is another free service from your Institute. If you wish to join the ITHE scheme, please send a SASE to the Federal Coordinator for an application form.

One Australian ITHE participant reported a meeting with an overseas visitor and this office received three direct enquiries this year.

The total Australian membership remains at 21 individuals or couples, and continued publicity at suitable intervals should improve the situation. All ITHE members are requested to write to the Coordinator when their contact details change.

Ash Nallawalla VK3CIT
ITHE Coordinator

FEDERAL OFFICE MANAGER

Membership

Actual membership at the end of 1994 was 5838 as compared to 6185 in 1993. This should be of some concern to all Divisions of the WIA. Although the Federal Office conducts an ongoing recruitment program through several avenues by mailing out Recruitment or Study packages, a recruitment program needs to be incorporated at a Divisional level. The costs of recruitment to the Federal WIA for 1994 was $547 out of your Federal Component of fees. Following are the recruitment statistics which represent a 10.5% success rate:-

Total Number of Packages sent.....338
Total New Members joined.....38
New Callsign packages sent.....583
Total New Members joined.....54

1995 promises to be an interesting year, particularly in light of VK4's decision to administer their own membership.

Federal Office Administration

During 1994 there were improvements in some work practices and overheads which can be seen from the financial report.

Bruce Thorne resigned as Federal Secretary in September 1994 and I assumed his role until Lewis Badge was employed. Restructuring is continuing in the Federal Office and the financial benefits will be passed onto the Divisions.

My thanks go to the office staff during a difficult and uncertain 1994, for their hard work and support.

Donna Reilly
Manager

HISTORIAN

The most useful task in Federal history during 1994 has been in preparation for the centenary of Federation in 2001. The consolidation of relevant material has been part of the routine of collection of information and material.

The oral history project on the RAAF Wireless Reserve has developed beyond the original intention because of the response to the project. Among the items now held are notes and early drafts of a history written by an original member of the Reserve and very active member of the WIA, Bob Cunningham VK3ML. The VK7 Division has loaned, on promise of good care by the Historian, the original log of the VK7 Guard Station, the most valuable single item we hold. We have also been given, by various amateurs, copies of Reserve membership lists and other printed material. I am very grateful to all those amateurs who responded.

The project on women amateurs is proceeding slowly. We tend to see history as looking back as far as possible. I have tried to balance this out by seeking material from more recently qualified amateurs. The encouragement and active help of ALARA members is particularly appreciated. I must emphasise that this is a long term project and we will catch up with everyone who has offered to contribute.

The Council should be aware that the two projects have incurred minimal costs so far, but we are now at the stage where there will be a requirement for about 100 tapes over this year. The main problem I have is that of coping with too much diversity at once. I have been offered help with taping and transcription. I have asked to borrow the small Federal tape recorder to make this simpler.

The Federal history records include a good collection of Federal minutes. This has been put together at irregular intervals with some gaps which occurred between historians. I would suggest that the Federal Office provide copies of all minutes regularly. One package per year would be adequate for historical purposes.

I have had requests for some information, generally from other amateur organisations, about the IARU and the ITU. It is difficult to put any strict time limit for the collection and storing of Federal material, but it is desirable that we tighten up the procedure for dealing with material from overseas which should eventually be part of the historical archive.

The most difficult time for the Historian has been during the past controversial year. It is inevitable that whenever an active, vigorous controversy arises in the amateur service information will be sought from the Historian. Examples are relating to licence fees and the constitution of the Federal organisation. The role of the Historian is to provide historic fact whether it pleases the inquirer or not.

The most pleasing duties have been to supply excess material to clubs and to provide talks or material on request. The Historian always has some duplicated material, mostly magazines, which could find a better home. My priority list has been Division, Club then individual amateur. There will be a list of excess material in *Amateur Radio* later in the year. It will be available on the stated priority, then first in, first returned basis.

I have recently been told that some amateurs who were relicensed after the Second World War intend to celebrate the fifty year anniversary during 1995. We hold a fair bit of material from 1945 and we should offer any help we can give to the organisers of the celebration.

John W E Edmonds VK3ATG/AFU
WIA Federal Historian

PUBLICATIONS COMMITTEE

Achievements Not without some "hiccups" the Publications Committee and staff successfully produced an issue of *Amateur Radio* magazine for each month of 1994, at a cost per issue posted to each of the 5000 plus members of $1.88, 20 cents below the budget expectation. This was much better than the figure of $2.24 for 1993 which was itself better than expected by that year's budget. The main areas of improvement were in advertising ($14,000 above budget) and total expenses (almost $10,000 below budget). Savings were made in the areas of postage, salaries as apportioned, and typesetting.

Problems Unfortunately, the success described has earned a "sting in its tail" in that Council has reduced the budget allocation to the magazine for 1995. This has reduced the space available for technical articles, which has been aggravated by a tendency for some of the special-interest columnists to expand their space needs from time to time. The February "data issue" has consequently been much attenuated, and due to the obligation to publish the annual reports such as this, there is little space left over!

In August, Council proposed to revise the *Amateur Radio* pre-print production system to open it to commercial tenders, other editorial arrangements remaining unaltered. The Committee declared itself unanimously and vigorously opposed to the concept as proposed on grounds of increased cost and reduced efficiency. Short lead time and closeness of control are also factors. Council was therefore persuaded to rescind the proposal and to extend the Assistant Editor's contract to produce *Amateur Radio* and the Callbook until the end of 1996.

Concerning the Callbook, following the marketing of unauthorised reproductions on CD-ROM there was some uncertainty about the Callbook copyright, as a result of which production of the 1994-95 book was delayed until action by the Australian Government Publishing Service confirmed its copyright position. Eventual production was accelerated and the Callbook was published only a few weeks later than usual.

Summary Altogether, 1994 was a challenging year in the history of *Amateur Radio* magazine. The present Committee (unchanged since last year) have had much to keep them occupied, and some members have served for more years than they care to remember. An appeal in the November 1994 *Editor's Comments* for "new blood" on the Committee has produced no response so far. Having read this report to this point, is it possible that YOU might be interested? We need literate, technically competent, WIA Full Members resident in or around Melbourne and looking for a challenge! Can you help to keep *Amateur Radio* and amateur radio alive into the 21st Century and the 3rd Millennium?

Bill Rice VK3ABP
Editor

FEDERAL QSL COLLECTION

As reported in the April 94 edition of *Amateur Radio*, the Federal Council passed a motion on 20 February 1994 which transferred the WIA Collection from Victorian Division control to the Federal body, thus in effect giving the Collection a national status. The Victorian Division had previously supported the Collection financially for four years.

The Collection is now one of the largest in the world, cards numbering close to 850,000. Although enquiries have been made it would seem that only Austria has set up a similar project. Duplicate cards are exchanged with that country every three weeks.

Some use of the Collection is made by writers of radio history, but we would like more use to be made of the Collection in this regard. In some cases photographs of QSL cards have been used to illustrate articles written for *Amateur Radio*. This is in addition to the regular bi-monthly articles entitled "QSLs from the WIA Collection" written by the honorary curator of the Collection.

Selections of QSL cards have been exhibited at several ham conventions and clubs. We would like to see further use of the Collection being made in this way. For this reason, Secretaries of Clubs are asked to make enquiries of the Curator (who is willing to give a short illustrated talk on the development of amateur radio and DXing). The Collection contains QSL cards of every DXCC country in the world including all deleted countries. A selection of cards of each country has been mounted in display boards. Any offer of assistance from people who would like to lend a hand in maintaining this historical collection would be greatly appreciated.

Ken Matchett VK3TL
Honorary Curator

VK9/0 QSL BUREAU

The past year was very quiet, with a drop in licences taken out by visitors to the various VK9 call areas.

With the high costs associated with DXpeditions there has come a reluctance by DXpeditioners to answer bureau cards. Where this becomes known, overseas DX Bulletins are advised and hopefully this stems the flow of bureau cards.

Other than those two items there is nothing further to report.

N Penfold
VK9/0 QSL Bureau Manager

WARC AND CCIR

ITU Conference and Study Group Report

The new structure of the ITU is now well established with its increased encouragement of "small m" members, that is to say organisations representing users such as the IARU and ICAO, and private operating agencies such as Telecom Australia and AT&T. This has meant increased involvement by the IARU in ITU meetings and conferences.

The "big M" members are the administrations of the countries that make up the membership of the ITU. It is the "big M" members who, of course, make the binding decisions on the substance of the International Radio Regulations. These Regulations have international treaty status.

While the IARU work with the Radiocommunications Bureau (BR) is extremely important even more important is amateur participation with individual administrations. The next stage in the reform of the ITU on the Radiocommunications side is the possible simplification of the radio regulations. A Volunteer Group of Experts was set up to tackle this task and has produced a voluminous report which will be presented at WRC 95. The recommendations from this report will be discussed as part of the agenda of WRC 95.

Currently there are no proposals to change Article 32 which deals with the amateur and amateur-satellite services. There is also no perceived scope to alter the international frequency table in Article 8 in so far as the amateur services are concerned. However there are proposals to look at the footnotes to the frequency table and this could have important implications for the amateur services.

Two critical footnotes for the amateur-satellite service are 664 and 808. It is only by virtue of these footnotes that the amateur-satellite service has access to any bands between 148 MHz and 10 GHz. Footnote 808 is simple in that it says "The band 5830-5850 MHz is also allocated to the amateur-satellite service (space-to-earth) on a secondary basis". Inclusion of the amateur-satellite service in the frequency table 5830-5850 MHz (space-to-earth) would be entirely consistent with the philosophy of the VGE Report concerning footnotes.

Unfortunately footnote 664 our world wide means of access to a further five bands for the amateur-satellite service gives the amateur satellite service an apparently less than secondary status. The origin to this footnote goes back to 1971 when at the WARC to deal with Space Services there was resistance to the inclusion of the amateur-satellite service in any shared bands. Only at the last minute, following strong lobbying by the IARU, was the footnote which then only covered 435-438 MHz with strict restrictions included.

CCIR studies carried out between 1972 and 1978 showed that there were no peculiar sharing problems caused by the amateur-satellites. Although the move from a footnote to inclusion in the table would not change the amateur-satellite services access to the bands it would render it much more visible to the frequency managers who plan the spectrum. This is a problem that I have already encountered a number of occasions in Australia.

Another matter to be considered arising out of the VGE report is the fate of the resolutions and

recommendations which make up part of the Radio Regulations. There are several resolutions that are vital to the operation of the amateur service. Such as that concerned with earth stations in the amateur-satellite service resolution 642.

Another matter to be considered at WRC 95 which will concern the amateur services will be the recommendations on matters to be included on the agenda of future WRCs. There are several matters pending such as the harmonisation at 7 MHz. The Radiocommunications Bureau Study groups have a number of Working Parties and Task Groups which over the last year have covered matters of concern to the amateur services. Task Group 2/2 sharing matters between 1000 MHz and 3000 MHz. Task Group 8/2 technical parameters and preferred frequencies for Wind-profiler radars. Working Party 8A dealing with the amateur services and the mobile services in general.

Meetings were held of the Radiocommunications Advisory Group, set up to advise the director of the Radiocommunications Bureau, and the Conference Preparatory Meeting (CPM) for WRC 95. The CPM is an ongoing committee that will prepare reports on both technical and regulatory matters from the Study Groups of the (BR) for each future WRC. The Australian International Advisory Committee (IARC) and its sub-committee for world radiocommunications conference preparation has met regularly during the year.

Representation

I represented the WIA at these meetings which have wide representation from all users. My presence at the meetings maintained a continuous awareness of the amateur service. As representative of the IARU I attended the December meeting of Task Group 2/2 and some of the sessions of WP 8A. While in Geneva I had a chance to attend some of the Task Group 8/2 meetings not clashing with meetings of TG 2/2. Task Group 8/2 has given significant consideration of the amateur bands which are in the region of the preferred wind profiler frequencies around 50 MHz, 400 MHz, and 1000 MHz.

The Radiocommunications Bureau Study Groups have their equivalents in Australia. I attended meetings of Australian Study Group 8. This study group deals with amateur and mobile matters. I also attended all meetings dealing with Task Group 2/2.

WRC 95

This conference is to be held from 23 October-17 November 1995 in Geneva. There are two major items on the agenda of this conference. One concerning the mobile satellite service looks as if it will not affect the amateur services although the feeder link frequencies will need watching. The second, the consideration of the VGE report will definitely have issues that concern the amateur service.

Australia has indicated that it supports the deletion of the amateur satellite footnotes with the inclusion of the amateur-satellite service in the table. It also supports the retention of the resolutions concerning the amateur services in the Radio Regulations. WRC 95 is to recommend to the council the agenda for the 1997 WRC and give its views on the preliminary agenda for the 1999 Conference and on possible agenda items for future conferences. Discussion of the agendas of future conferences will certainly raise matters that affect the amateur services.

Recommendations

That as a matter of priority the WIA seeks membership of the Australian Delegation to WRC 95, in order to assure that Australia's favourable stance on amateur issues is pursued thoroughly to further the cause of amateur radio.

That the WIA continues to participate in the IRAC and the relevant Australian Study Group meetings

David Wardlaw VK3ADW

WIRELESS INSTITUTE CIVIL EMERGENCY NETWORK (WICEN)

High Points

The high points for WICEN during this last year are difficult to list as there are quite a few. I should start this report with the Presentation to WICEN Victoria of a Certificate of Recognition for their effective emergency response in the October 1993 floods in North East Victoria in October 1993 by the Government of Victoria. The Certificate was presented by Pat McNamara, Deputy Premier and Minister for Police and Emergency Services. 45 Members of WICEN were involved in the activation.

The WICEN New South Wales response to the Bush Fires was recognised by the State Government through the Volunteer Rescue Association and each of the 130 plus amateurs involved (whether WICEN Members or not) received a Certificate of Appreciation. The scope of our involvement in the NSW fires was very diverse and attracted much interest from the emergency services in other States. As a result, David Thorncraft from NSW WICEN was invited to travel to Melbourne in October to address some 400 people at the 1994 Combined Emergency Services Seminar at La Trobe University on his experiences with the bushfires. David s presentation was very well received and increased our exposure to many people from the many agencies attending. Particularly those attending from NSW. WICEN involvement also gets a mention in a recently published book on the fires.

The Senate Committee reviewing Disaster Management in Australia released its report and WICEN got very good treatment from them. One of their recommendations was for a member of WICEN to be appointed to the National Communications Advisory Group. This Group investigates and reports on communications issues to the Director of Emergency Management Australia. This recommendation was taken up by Emergency Management Australia and WICEN is now represented on this Group.

Low Points

During the last year (plus a bit) WICEN has been involved in two very large activations and several minor ones. I believe that the lack of publicity that we amateurs are getting from these activations is pitiful. The blame for this does not lie totally within WICEN as to them the publicity aspects of amateur involvement in emergency service is secondary to their role during the activation. There are, however, the publicity arms of the WIA Divisions which could and should swing into action whenever WICEN has people in the field. Radio Clubs should also get information to local newspapers as well.

It has been said to me that lack of support and publicity in NSW came from some personality differences. To me this is not a good enough reply. Amateur radio in Australia today is undergoing much pressure from Government re spectrum. I do not believe that we can afford "misunderstandings" or "personality conflicts" to deprive us of excellent opportunities to get evidence of the worth of amateur radio before the general public and the Federal Government.

Summary of Year

Most Divisions are still developing their Regional structure and are trying to recruit appropriate members. The current membership of WICEN is about 1200 nationally with about the same number of people indicating that they would support WICEN in activations but who do not wish to formally join. WICEN has made more than 50 presentations to members of Police, State Emergency Services and other agencies during the year. There is a growing number of requests from Radio Clubs, Service Clubs and others for speakers. The feedback that we receive from these presentations is very favourable of both WICEN and amateur radio.

The WICEN Information Network has been expanded and so Queensland and Tasmania can now communicate directly with New South Wales, Victoria and South Australia. The network has a limited availability in Western Australia.

There are several project groups working on standardising documentation nationally. While there is general agreement as to content there are many small inconsistencies due to different Incorporations, operating through different agencies, etc. These will eventually be overcome and a National Operators Manual, etc will result. During the year WICEN has had an offer from a Historian and we will shortly be asking for assistance in getting information from all amateurs on our past for her to collate and research. This request will be published in *Amateur Radio* shortly.

Many WICEN Divisions are taking advantage of the Courses for Emergency Management Australia and are nominating members for the Introduction to Emergency Management, Emergency Planning and Emergency Response Courses. All courses are multi agency and so increase our exposure to Police, Fire Services, SES members etc. The introductory course is done on a regional level and also has the effect of making sure that people will know the people that they will actually work with in an activation. Our members report that these courses are very worth while attending.

Ken Ray (ACT), Ian Watson (SA) and Brett Wilkinson (NSW) all stood down from senior positions during the year. I would like to thank them for their hard work and to wish their successors, Rob Apathy (ACT), Phil Pavey (SA) and David Thorncraft (NSW) a very quiet but productive time in their new positions.

Conclusions

WICEN is still developing towards a national unity of planning and effort and at the same time is trying very hard to develop a regional response plans rather than just Capital City response to activations. Emergencies affect local communities and it is the locals who need input to planning as well as to any response.

Recommendations

(1) There needs to be a conscious, deliberate agreement between WICEN and the WIA to allow amateur radio to more effectively use and promote WICEN activities to the community and to Government.

(2) To assist in the more rapid development of WICEN administration and documentation there needs to be a face to face conference of the members of each WICEN Division.

Leigh Baker
Co-ordinator
WICEN Australia

Repeaters — Additions, Deletions, Alterations. Have you advised the WIA of changes needed to the Repeater list?

ALARA

Sally Grattidge VK4SHE, ALARA Publicity Officer*

ALARAMEET 1996

28 and 29 September in Perth, WA. Put these dates on next year's calendar NOW.

Incorporation

A Special General Meeting was held on 80 metres on air on 27 February 1995 with 14 members on air. Those who could not attend sent postal votes. The decision was for ALARA to be incorporated in Victoria. The response of members to the question shows that ALARA is alive and well.

Traveller's Tales

Several members have been on the move lately, so here are some of their stories.

Eyeball at 220 Springvale Road, Glen Waverley

Bev VK4NBC managed a rather rare eyeball during a recent visit to points South. Following an enjoyable ten days in Taradale with Judy VK3AGC and OM Ron VK3BYM, the Queensland "Crocodiles" arrived in Melbourne, or rather Mulgrave, and set about arranging an eyeball with Mavis VK3KS and OM Ivor VK3XB.

However, next morning found the Nice Bright Crocodile rather lame. Somehow, somewhere, Bev had wrecked her back and getting mobile was both difficult and painful. What to do, with two weeks to go on the trip? They decided to wait a day or two and hope things would improve.

The evening before they were to meet, during the AFARN net, a message came over the airways from Mavis via Judy to say that Ivor was not well and was to have a scan the following day. Meanwhile, Bev had gone in desperation to a chiropractor who insisted on X Rays before treating her back. At the diagnostic clinic, Bev found herself at the end of a very long queue. While amusing herself with walks and drinks of water she observed a couple of familiar faces coming through the door. Mavis and Ivor had come to keep their appointment!

Much later, after the chiropractor had administered the "big crunch", and Bev was able to move a bit more easily, she and OM Graham VK4BGC went in search of the QTH of Mavis and Ivor, with help via two metres, and spent an enjoyable hour over a cuppa and goodies.

Cooling Off?

Bev VK6DE and OM Brian VK6AI visited Tasmania, where they enjoyed the scenery but found 16 degrees a bit of a shock after Geraldton, WA. While in South Australia they stayed with Meg VK5AOV and David VK5OV at Murray Bridge, where they were able to meet Christine VK5CTY, Geoff VK5TY, Jenny VK5ANW and Bill VK5AWM for afternoon tea. Plans for ALARAMEET 1996 were discussed. While in VK3, they stayed with Marlene VK3WQ and Jim VK3DL.

Family Matters

Sally VK4SHE and OM Rex went south on the family history trail, and spent three weeks in Victoria, mainly at Happy Valley near Myrtleford, and a lot of time on the road. There was not much opportunity for radio contacts, but they were able to enjoy a tea break at the beautiful QTH of Mary VK4PZ and Gordon VK4GM near the Caves outside Rockhampton, and another with Margaret VK4AOE in Dalby on the way down; also a chat on two metres with Robyn VK4RL in Rockhampton.

A couple of days were spent in Melbourne, but they were too busy with family to make any radio contacts. On the way back they were able to visit Bev VK4NBC and Graham VK4BGC, while staying with a daughter in Brisbane. The last day was a 13 hour drive from Eidsvold, so just a quick word on two metres with Mary while going through Rockhampton. Thanks to Merv VK4DV for being there and telephoning Mary.

The HF antenna had been taken down and all the gear packed away in "cyclone mode", and SHE decided to leave it that way while cyclone Agnes decided where to go, then made a late decision to put it up anyway for the Friday night net. Almost beaten by failing light, and completely entangled in shoulder high grass, it ended up about half mast, but it worked anyway.

Signal Reports Bron VK3DYF

Signal reports can be a problem for some amateurs. A good idea is to practice deciding on the figures when you are on the air in a group, but not necessarily in need of giving a report.

Too often we hear someone say "I will look at the meter", but the best meter is your ears. If you can hear clearly enough to give a readability report, then there must be some signal strength being

received despite the fact that the needle may be lying down and showing a 0 figure. So if you can read the signal, you must give a strength figure even if it is only a one or two.

(I have always found the figures confusing and prefer the method used in SES — Loud and Clear, Good Readable, Readable, Weak Readable, Unreadable, Nothing Heard. Sally VK4SHE.)

From the Newsletter

The VK5 ladies were pleased to meet Yvonne VK5AYK at one of their lunches and welcome her as a member of ALARA. The Birthday Luncheon will be held on Sunday, 30 July and will take the place of the usual Friday get-togethers for July and August.

Marilyn VK3DMS and OM Geoff have recently become "adopted" grandparents of Anna and Hayley, with another one on the way. What a great way to overcome the problems of distance and separation which leaves many children without contact with the older generation.

Maria VK5BMT and OM Keith have been fishing at Edithburgh. Good fishing, but not much radio due to a broken vertical. They are off on their winter travels, soon, to Canberra to see the Queen's pictures, and then on up the Queensland Coast to Cairns. (Don't forget the NQ Convention in Townsville on 16 and 17 September!)

Poppy VK6YF and daughter Lynda enjoyed lunch with Aimee FK8FA and Michel FK8GO in Perth in February. Aimee and Michel were stopping over on their way to France for a holiday. They are going to buy new equipment in Singapore on the way home, so look out for super signals from Aimee next ALARA contest.

Mavis VK3BIR/2 hopes to have her antenna up soon. She has been busy assisting the Merimbula Coastal Patrol, doing a five hour shift once a week. Mavis and OM Jim are planning to travel to Queensland for the winter, also Melbourne and Adelaide. Listen for them on two metres.

Helen VK7HJ is not very radio active being away at boarding school, but has been involved in the RD contest, JOTA and WICEN (wonder what she does when she is active?).

Jeanne ZL4JG has moved to a new house with more room for antennas. She has been elected to NZART Council. In WARO, she is changing jobs from Editor to Contest and Awards Manager.

Christa DJITE plans to retire soon and spend more time hamming and travelling.

Robyn VK3ENX married Colin VK3DEV just before Christmas 1994.

Margaret VK3DML and OM George are first time grandparents to Oscar Thomas born 13 January 1995.

Ronnee VK4STS has a daughter, Stephany Louise, born 11 February 1995. With a new baby, young son, and OM starting a new business, we may not be hearing much from Ronnee for a while.

The Townsville YLs met for lunch in April to discuss plans for activities for the ladies at the North Queensland Convention on 16 and 17 September 1995. Several ideas were considered, but if any YLs hoping to attend have thoughts about things they would like to do while in Townsville for the Convention, please contact Sally VK4SHE.

Dot VK2DDB is recovering from a "valve grind and decoke, and a muffler overhaul and reposition". She was in the WARO contest with Margaret VK2MAS doing "more talking than knitting" despite noisy conditions.

**C/o PO Woodstock, QLD 4816*

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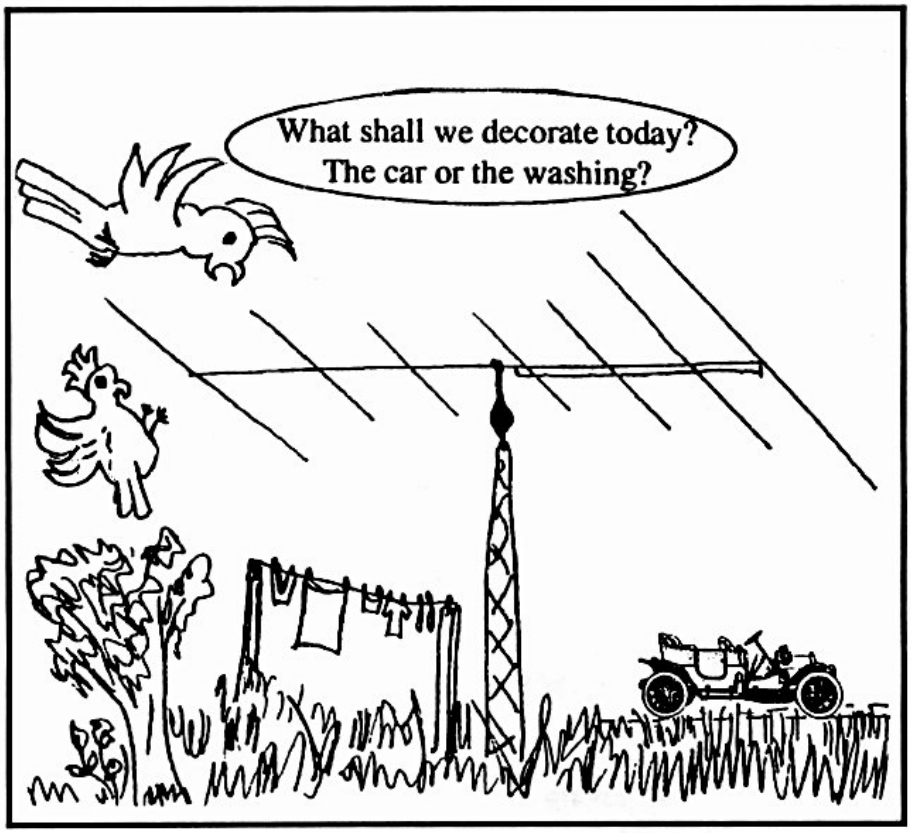

Mary VK3FMC has a problem. When the beam is set one way, the birds leave their calling cards on OM Dick's (VK3DLC) vintage Mercedes. If it is turned the other way, Mary's washing receives the "donations". Passers-by think they have a lot of DX contacts!

WIA News

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of April 95.

L20998	MR A R FARRAR
L20999	MR R A F CHEVIS
L70128	MR E GOWER
L70129	MR P N DENNE
VK2DIL	MR G K WILSON
VK2EVK	MR V BENNETT
VK2LSH	MR J F SMITH
VK2NMH	MR M E HALL
VK2NSC	MR J CORRIGAN
VK2TL	MR S A WATSON
VK2WMS	MR M SACHAROWITZ
VK5LR	MR P J PTOLOMEY
VK5MAP	MR P A MEIER
VK6OA	MR A HEADLEY
VK7KIH	MR I R HART

AMSAT Australia

*Bill Magnusson VK3JT**

National co-ordinator
Graham Ratcliff VK5AGR
Packet: VK5AGR@VK5WI
AMSAT Australia net:
Control station VK5AGR
Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):
Primary 7.064 MHz (usually during summer).

Secondary 3.685 MHz (usually during winter).

Frequencies +/– 5 kHz for QRM.
AMSAT Australia newsletter and software service
The newsletter is published monthly by Graham VK5AGR. Subscription is $30 for Australia, $35 for New Zealand and $40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:
AMSAT Australia
GPO Box 2141
Adelaide SA 5001

American Presence on MIR Space Station

Astronaut Dr Norm Thagard is the first of a number of American astronauts scheduled to fly on the Russian space station MIR over the next two years. Their presence on MIR is part of the on-going co-operative program to establish a joint space station and carry out further space exploration. Amateur radio has assumed such a high profile at NASA that we can expect many, perhaps all, of these Astronauts to be active via the MIR amateur radio station during their time on board. There has been a flurry of activity on packet and all amateur radio related news groups and forum areas of Internet during Norm's flight. It shows no sign of diminishing.

Future missions will include (information from NASA) *Astronaut Shannon W Lucid, PhD, who will be the second American to be a prime crew member during a five-month stay aboard Russia's space station MIR in 1996; and Jerry M Linenger (Commander, Medical Corps, USN) who will be the third American to fly to the orbital laboratory, also in 1996. These assignments continue the US/Russia human space flight cooperation, which consists of a three-phased program.*

Phase one includes seven planned Space Shuttle-MIR missions between 1995 and 1997, including rendezvous, docking and crew transfers. The Space Shuttle will assist with crew exchange, resupply and payload activities for MIR. Russian cosmonauts have flown on two Shuttle Missions, STS-60 in 1994 and STS-63 last month. Four or more US astronaut stays aboard MIR are planned, totalling nearly two years of on-orbit time. Phase two is the joint development of the core international Space Station. Phase three is the expansion of the Space Station to include all of the international partners.

The next few years should provide some very interesting opportunities for contacts with the MIR visitors and crew. I'll include a segment on how to contact MIR in the column over the next couple of months, outlining the equipment requirements and operating etiquette.

Editing Large Keplerian Element Files

I had occasion, recently, to down load a large zipped set of keps from the Kelso data base. When expanded it resulted in a file some 700 kilobytes long. You may run into some difficulty when trying to edit files of this length. I did. None of my editors would handle it and eventually I imported it into a word processor and did it that way. I subsequently came across a better way which may be old hat to some but not known to others. It is a small shareware utility called "chunker". There are probably others but chunker is the one that came my way. It breaks up long files into smaller chunks to allow editing by most screen editors. It will also combine small files into one large file. It works well. Let me know if you would like a copy. Please send a disk and return postage.

Source of Rare RF Connectors for Home Brewers

Some time ago James Miller wrote an article on the construction of a small helix for 2.4 GHz operation on OSCAR 13 mode S. In the course of the article he mentioned that he had used a rather rare "N" type connector in order to reduce the number of connectors between the helix and the pre-amp (to minimise losses). The connector was a panel mounted "N" type plug. The normal "N" type panel mount could be described as a socket rather than a plug. James warned they may be hard to find.

Indeed, they did prove hard to find locally. Fortunately I have a friend who works in the Aero-Space industry. His job includes searching out unusual components and he came to the rescue. I have now located a source of such rare connectors in Melbourne and have purchased the two I needed. The suppliers have a large range of RF connectors including many which are normally not found around the amateur radio traps. Write to Hardie Networks, 205 Middleborough Rd, Box Hill, VIC 3128.

WiSP latest

Chris Jackson ZL2TPO, the author of this ground breaking piece of software, is now resident in England. He holds the call sign G7UPN. Chris continues to write and test newer versions of the program. The most current version is usually available from the digital satellites but, if you are just starting out, that may be difficult (Catch-22!). The latest versions of this, and most other amateur radio satellite related software, may be found on the AMSAT-NA FTP site on Internet. The host name is FTP.AMSAT.ORG and the directory structure to get to the latest WiSP files is, amsat/software/windows/wisp. The wisp95xx.zip file with the highest xx is the latest up load. There will be an associated .txt file giving details of installation, etc. Remember, you still have to register your copy of WiSP in order for it to function properly.

Windows Based Tracking Program

Whilst on the subject of Internet, an interesting Windows based satellite tracking program is available from the Oakland FTP server. The address is oak.oakland.edu and the directory structure is, pub3/hamradio/pc/satellite. The file to look for is winorbit24.zip. It has lots of good features but I found it complicated and clumsy to configure and use. If you like the Windows way of doing things you may like it, but don't expect it to be a substitute for IT.

Next Month

The regular half-yearly update of amateur satellite frequencies and modes.

**359 Williamstown Rd, Yarraville VIC 3013*
Packet: VK3JT@VK3BBS.#MEL.VIC.AUS.OC
CompuServe: 100352,3065

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Club Corner

Special Event Callsign for LFARFG

This year sees the 50th commemorative year of the cessation of hostilities in the Pacific and Europe, which is of particular interest to the Land Forces Amateur Radio Group (LFARG). The group has had approval from the International Telecommunications Union (ITU) in Geneva to use the special event call sign VI50WW2 for their operations from 6 May 95 to the end of August.

The call sign will be used by group members to make contact with amateur radio operators both in Australia and overseas. The group proposes to issue a QSL card to all who make contact with the station using the special event call sign. Shortwave listeners will also be able to receive a QSL card where they can confirm a contact between two operators. An award certificate is being designed for use over the August period. Further details will be advised. The group is also liaising with the Department of Defence for use of its facilities at Watsonia, Victoria during the month of August.

The group members consist of serving and ex-service personnel from various armies from around the world, and are spread over all the states of Australia. The LFARG operates on 3.590 MHz LSB each Wednesday evening at 2000 hrs sharp (some members have been known to be AWOL), where discussions are generally of a military nature. The membership of the group is currently at 80 and in this special year the club is actively seeking the enlistment of its 100th member. The running of the special event call sign VI50WW2 has been welcomed by the RSL and the Department of Veteran Affairs who are responsible for "Australia Remembers".

Information on the group can be obtained from the group president, VK1NCO/3 Sergeant John O'Brien, business hours telephone, HQ Log Comd, (03) 282 6685.

A W Mosely
Publicity Officer
Land Forces Amateur Radio Group

Armidale and District Amateur Radio Club Inc

The following were elected at the Annual General Meeting held on 9 March 1995: President, Phill Beard VK2AFX; Secretary and Public Officer, Roger Chubb VK2FGE; and Treasurer, Ron Clark VK2CRD.

Meetings are held on the second Thursday of each month at 7.30 pm at 32 Grafton Road, Armidale.

The New England Amateur Radio Regional Conference Group meets twice a year, March and September.

Geoff Bastow
Past Secretary and Committeeman

Waverley Amateur Radio Society Inc

This society has just completed its 75th year and is the oldest continuously licensed radio society in the country, although its callsign VK2BV has seen little use for a number of years due to the lack, until this year, of permanent premises.

The past 12 months have been a busy time during which a new club room has been set up in the old Scout Hall at Vickery Avenue, Rose Bay (next door to the RSL Club). Much has been done by members to make it comfortable and to provide a good range of equipment.

Both Morse and theory classes are now being conducted for prospective amateurs and those wishing to upgrade their licences.

Our most successful meeting was held in February when we were fortunate to have one of our founding members from 1919, Gordon Thompson VK2AVT, as our guest speaker. He gave us a fascinating insight into the early days of ham radio and broadcasting. Gordon is the oldest licensed ham in the country and has since been made an honorary life member of the society.

Meetings are held on the first Friday and third Wednesday of each month at 7.30 pm, with the former being an informal technical session and the latter usually more a formal meeting with a guest speaker.

Anyone interested in amateur radio is always welcome to come along.

Simon Buxton VK2EII
Publicity Officer

Radio Amateur Oldtimers Club

The committee met on Tuesday, 9 May. Office bearers for this year are President, John Fullagar VK3AVY; Vice President and Broadcast Co-ordinator, Allan Doble VK3AMD; Secretary/Treasurer, Arthur Evans VK3VQ; Magazine Production, Stewart Day VK3ESD; Committee, Ron Fisher VK3OM, Bill Gronow VK3WG, Ken Seddon VK3ASC, and John Tutton VK3ZC.

Annual subscriptions, due by 30 June, will remain at $5.00 for the coming year, or $10.00 for two years.

50th Anniversary of Return to Amateur Licences

A suggestion has been made that this could be marked in a simple way by adding figures 50 to the CQ call for this year's Remembrance Day Contest, ie "CQRD50".

Allan Doble VK3AMD
ar

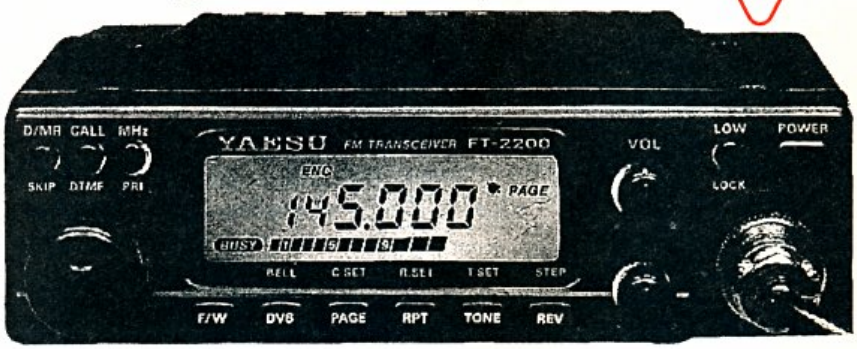
Help stamp out stolen equipment. Always include the serial number of your equipment in your Hamad.

A GREAT RANGE OF TRANSCEIVERS

FT-2200 2m Mobile Transceiver

The new FT-2200 is a compact, fully featured 2m FM transceiver providing selectable power output of 5, 25 and 50 watts, and includes the latest convenience features for more enjoyable mobile or base station operation. Built around a solid diecast chassis, it provides 49 tunable memories, a large variety of scanning modes, an instant recall CALL channel, 7 user-selectable channel steps from 5kHz to 50kHz and is just 140 x 40 x 160mm (not including knobs). Backlighting of the large LCD screen, knobs and major buttons is even automatically controlled to suit ambient light conditions. Also provided is a 38 tone CTCSS encoder, DTMF based paging and selective calling with Auto-Page/Forwarding features, and 10 DTMF auto-dial memories. The LCD screen provides a highly legible bargraph Signal/P.O. meter plus indicators for the various paging and repeater modes. An optional internal DVS-3 digital recording/playback board can also be controlled from the front panel, giving even greater messaging flexibility. Supplied with an MH-26D8 hand microphone, mobile mounting bracket and DC power lead.

Cat D-3635



$699

2 Year Warranty

FT-11R Micro Deluxe 2m Handheld

One of the world's smallest 2m FM handhelds with a full-size keypad, the Yaesu FT-11R has been reduced in size, but not in features. Designed to fit comfortably in your hand, it's just 57 x 102 x 25.5mm (W.H.D) including the FNB-31 NiCad pack, and weighs only 280 grams. The result of the latest in miniaturisation, microprocessor control and FET technology, the FT-11R provides a large back-lit LCD screen with full frequency readout, 150 memories (75 in alpha-numeric mode), full function keypad with easy SET mode, and up/down thumb control Volume and Squelch settings. A new high efficiency FET RF amplifier provides 1.5W output standard from the compact 4.8V battery pack, and up to 5W output from 9.6V (using an optional battery pack or PA-10 mobile adaptor). A range of battery life extenders, including Auto Battery Saver, Tx Save, and Auto Power Off (with ultra-low 20uA consumption) are included. Australian version Auto Repeater Shift, DMTF based selective calling and paging, extended 110-180MHz receiver coverage (including the AM aircraft band), and a variety of scanning modes are also provided. Other new features include naming of memory channels, DTMF Auto-dial memories, and DTMF Message Paging with up to 6 alpha-numeric characters. A large range of accessory lines are also available for easier customisation of your transceiver.The FT-11R comes with an FNB-31 600mA/H NiCad, belt-clip, approved AC charger, CA-9 charge adaptor and antenna.

Cat D-3640

$599

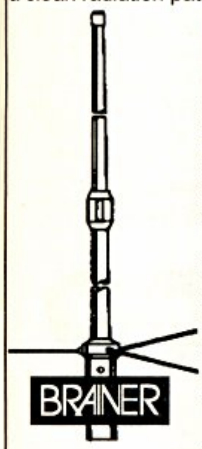
2 Year Warranty

DICK SMITH ELECTRONICS

AND HIGH QUALITY ACCESSORIES!

High Performance VHF/UHF Base Station Antennas

Our range of top-name Brainer base station antennas offer outstanding quality and exceptional value. They are stacked collinear types providing high gain, wide bandwidth and a low radiation angle for extended range. The fibreglass reinforced polyester (FRP) outer tubing randome and gasket seals provide excellent all-weather operation, and they are supplied with compact ground-plane radials for a clean radiation pattern. Stainless-steel mounting hardware ensures a long trouble-free life. They also feature comprehensive instruction sheets to make installation and set-up easier. Both come with a 1 year warranty, and are made in Japan.



2m/70cm GST-1

Frequency: 144-148MHz, 430-450MHz
Gain: 6dB on 2m, 8dB on 70cm
Max. Power: 200W
Length: 2.5m
Type: 2 x 5/8 wave (2m), 4 x 5/8 wave (70cm)
Connector: SO-239 socket

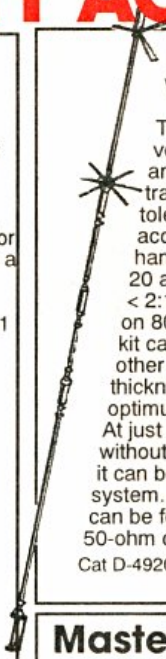
$199 Cat D-4830

2m/70cm GST-3

Frequency: 144-148MHz, 430-440MHz
Gain: 7.9dB on 2m, 11.7dB on 70cm
Max. Power: 200W
Length: 4.4m
Type: 3 x 5/8 wave (2m), 7 x 5/8 wave (70 cm)
Connector: SO-239 socket

$299 Cat D-4835

Rugged HF 5-Band Trap Vertical Antenna



The rugged 5BTV is a 5-band HF trap vertical which continues the Hustler tradition of quality and performance. It incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings) for accurate trap resonance with 1 kW (PEP) power handling. Wideband coverage is provided on the 10, 15, 20 and 40m bands (SWR typically 1.15:1 at resonance, < 2:1 SWR at band edges) with 80kHz bandwidth typical on 80m at less than 2:1 SWR. An optional 30m resonator kit can also be installed without affecting operation of the other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability.

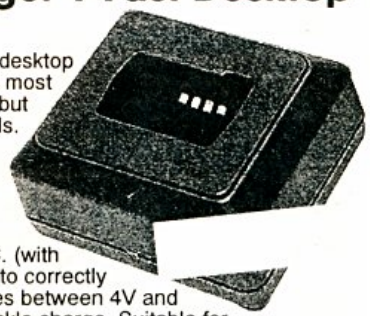
At just 7.65m, the 5BTV can be ground mounted (with or without radials, although radials are recommended), or it can be mounted in an elevated position with a radial system. Unlike some other antenna designs, the 5BTV can be fed with any length of 50-ohm coax cable.

Cat D-4920

HUSTLER® **$299**

Price valid until June 30th '95

Master Charger 1 Fast Desktop Charger



At last, an intelligent, fast desktop charger that not only suits most current Yaesu handhelds but also many previous models. Made in USA, the MasterCharger 1 operates from 13.5V DC and uses switch-mode technology plus a Philips battery charge monitor I.C. (with -ΔV full charge detection) to correctly fast-charge NiCad batteries between 4V and 13.2V, then switch to a trickle charge. Suitable for the FT-23/73, FT-411/411e, FT-470, FT-26, FT-415/815 and FT-530, its charging cradle can easily be replaced, allowing for the insertion of a new cradle to suit other Yaesu transceivers (eg FT-11R) or different brands/model handhelds. The MasterCharger 1 requires 12-15V DC at 1.3A, and is supplied with a fused cigarette lighter cable for vehicle use.

Cat D-3850

$149.95

Now available - charging cradles to suit various Kenwood, Icom, and Alinco handhelds. Special pricing expires 30/6/95

2m RF Power Amplifier

Boost your 2m hand-held's performance with this compact amplifier. Works with 0.3 to 5W input and provides up to 30W RF output, plus has an inbuilt GaAsFet receive pre-amp providing 12dB gain. A large heatsink and metal casing allow for extended transmissions at full output, and a mobile mounting bracket is supplied for vehicle use. Requires 13.8V DC at 5A max. Size 100 x 36 x 175mm (W x H x D).

Cat D-2510

digitor **$119.95**

Special pricing expires 30/6/95

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AWARDS

*John Kelleher VK3DP — Federal Awards Manager**

It is with deep regret, and with some personal feeling, that I announce the passing of Dorothy H Johnson, who was custodian of the *CQ Magazine's* Worked All US Counties Award.

In the past few months I have received correspondence in regard to the passage of QSL confirmations between Australian operators and some of the new independent states of the ex-USSR. To help many to obtain these necessary confirmations for Awards, twelve addresses of QSL bureaus are listed below.

EK — Box 22, Yerevan 375000 Armenia.
ER — Box 6637, Kishinev 50, 277050 Moldavia.
EU — Box 469, c/o EU1AO, Minsk 50, 220050 Belarus.
EX — Box 1100, ARUK Bishkek 720020 Kirghizia.
EY — Box 303, TARL Glavpochtamt, Dushanbe 734025 Tadjikistan.
EZ — Box 555, Ashgabat 744020 Turkmenia.
UK — Box 0, Tashkent 700000 Uzbekhistan.
UN — Box 112, c/o UN9PC, Karaganda 470055, Kazakhstan.
UR — Box 56, UARL Kiev 1, 252001 Ukraine.
4K — Box 165, c/o 4K7DWA, Baku 370000 Azerbaijan.
4L — Box 1, Tbilisi 380002 Georgia.
UA — Box 59, URR c/o RZ3AZO Moscow 105122 Russia, and also Box 88, CRCRF, Moscow, Russia.

Many thanks to Valery Kharchenko RA6YR for this information.

Now, as promised, details of the DX Dynasty Award. This is a fun award, sponsored by *73 Magazine*, and primarily reserved for crusty old DX Honour Roll members, who find that they have nothing better to do, and those eager beavers who have no hope of working countries that haven't been on air for 20 or more years. From a total list of 400 "countries", you may qualify for the basic 100, then continue on with endorsements for 150, 200, 250, 300, 350, 375 and 400 "countries" worked. The basic award is mixed mode. Special endorsements are available for single-band operation, and for specific modes, including CW, SSB, Satellite, Baudot RTTY, ASCII RTTY, Amtor, packet, spread-spectrum, QRP (less than 5 watts output), EME, FM, AM, FAX, SSTV and SWL.

Rules

Only contacts made after 0001z on 1 January 1987 will be eligible for the DXD Award. Contacts may be made on any amateur band. Any mode available to amateurs in your particular country may be utilised. Cross-mode contacts are allowed! There is no minimum signal report. Just as long as you make a reasonable contact. QSL cards are not required, but applications must be made on the official DXD form, normally available from *73 Magazine* at the WGE Centre, Peterborough NH 03458 USA. I say normally, because I could be coerced into running off a few copies for one IRC, and an SAE.

On the form, list your contacts in alphabetical callsign order, with all the usual log entry paraphernalia, plus power.

The committee reserves the right to inspect your untidy logs, so no funny business! Fee for the basic award, due upon application, is $US6.00. IRCs are not accepted. Each following endorsement is $2.00.

Country Criteria Countries on the DXD Award list are taken from the awards programs of IARU member nations. Take note of the following "countries" list. I have printed them by callsign in order to conserve space.

YA, 3B, OH0, KL7, ZA, VQ9 Aldabra, 7X, KH8, FT8Z, VU4, C3, D2, VP2E, 3C0, KC4 Antarctica, V2, ZL (The Antipodes), EJ0 Aran Island, LU, UG Armenia, P4, ZD8, ZL9, FO0 Austral Is, VK, OE, 4M0 Aves Is, UD Azerbaijan, CU2, C6, A9, KH1, EA6, T33, S2, 8P, JW Bear Is, ON, V3, TY, VP9, A5, CP, PJ Bonaire Is, JD1 Bonin, H5, A2, ZL Bounty Is, 3Y, PY, ZC, VP2V, V8, LZ XT, 1Z (Hidden in Burma!), 9U, UC Byellorussia, TJ, ZL Campbell Is, VE, EA8, D4, IC8 Capri, ZF, YB Celebes Is, TL, T31, EA9, TT, VQ9 Chagos, ZL7, FK8 Chesterfield Is, CE, BY, VK9X, S4 Ciskei, FO0 Clipperton Is, TI9, VK9Y, HK, 9H Comino Is, D6, TN, 3D2 Conway Rf, ZK1, TK, TI, SV9, FT8W, CO, PJ Curacao, 5B4, OK, OM, OZ, KP5, VQ9 Desroches, VQ9 Diego Garcia, J2, SV5, J7, HI, KC6 East Caroline Is, T32, CE0 Easter Is, HC, SU, YS, G, 3C, UR/ES, ET3, FR/E, VP8 Falklands Is, OY, VQ9 Farqhar Is, PY0 Fernando de Noronha, 3D2 Fiji Is, OH, F, UA1O Franz Josef Land, FY, FW Futuna Is, TR, HC8/HD8 Galapagos Is, C5, UF Georgia, 9G, ZB2, FR/G, ZD9 Gough Is, 9H4 Gozo, VP8 Grahamland, SV, OX, J3, FG, KH2, KG4, TG, GU, 3X, J5, 8R, HH, KH6, VK0 Heard Is, HR, VS6/VR2, KH1 Howland Is, HA, TF, EA9 (Ifni, now W Sahara), VU, YC Indonesia, EP, YI, EI, IC Ischia Is, GD, 4X, I-IZ, TU, 6Y, JX, JA, KH5J Jarvis Is, YC0 Java, GJ, KH3, JY, FR/J, CE0 Juan Fernandez Is, UA2 Kaliningrad, VS9 Kamaran Is, XU, UL Kazakh, 5Z, FT8X, ZL8, KH5K, UM Kirghiz, HL, KH7, 9K, KX6 Kwajalein Is, VO2 Labrador, VU7, IG9 Lampedusa Is, XW, UQ Latvia, OD, 7P, PJ Lesser Antilles, IF9 Levanzo Is, 5L, 5A, HB0, T30, UP Lithuania, VK9L, LX, 4J, XX, VK0 Macquarie Is, 5R, IM Maddalena Is, IL Maddona de Monte Is, CT3, 7Q, 9M2, 8Q, TZ, HK0 Malpelo, 9H Malta, ZK1 Manihiki, JD Marcus Is, KH0, ZS2, OJ0, FO Marquesas Is, V7, PY0 Martin Vaz Is, FM, 5T, 3B8, FH, VK9 Mellish Rf, XE, KH4, 7J Minami Toroshima, FP, UO Moldavia, 3A, JT, VP2M, CN, SY, C9, ZS3/V51, C2, KP1 Navassa Is, 9N, PA, PJ2, V4, FK New Caledonia, YJ New Hebrides/Vanuatu, ZL, VO1 Newfoundland, YN, VU4, 5U, 5N, ZK2, VK9N, GI, LA, KA2/JD1 Ogasawara Is, 7J Okino Tori Shima, A4, AP, KH5 Palmyra Is, HP, IH Pantellaria Is, P29, ZP, ZS9 Penguin Is, OA, 3Y2 Peter 1 Is, DU, VR6, SP9, IB0 Ponziani Is, CT, ZS2 Prince Edward Is, VE1 Prince Edward Is, S9, KL7 Pribiloff Is, HK0 Provedencia Is, KP4, A7, FO Rapa Is, FR Reunion Is, XF4, 3B9, YO, HK0 Roncador Cay, KH0 Rota Is, 3D2 Rotuma Is, UA0, UA6, UA9, 9X, JR6 Ryukyu Is, PJ7 Saba Is, 9M6 Sabah, CY0 Sable Is, KH0 Saipan, UA0F Sakhalin Is, HK0 San Andres Is, XQ0X San Felix Is, T7, S9 Sao Tome, 9M8 Sarawak, IS Sardinia, HZ/7Z Saudi Arabia, GM, 6W, S7, IT9 Sicily Is, 9L, 9V1, PJ8 Sint Eustatius Is, PJ7 Sint Maarten, 1A0, FO0 Society Is, H44, T5, ZS, VP8 Sth Georgia Is, VP8 Sth Orkney Is, VP8 Sth Sandwich Is, VP8 Sth Shetland Is, ST0, EA, 1S, 4S7, 3B7, ZD7, V4 St Kitts, J6, FS/FG, CY9, PY0 St Peter & Paul Rocks, FP5 St Pierre Is, J8, ST, YB4 Sumatra, PZ, JW Svalbard, 3D6 Swaziland, SM, HB9, YK, UJ8 Tadzhik, BV, 5H3, VK7, HS, KH0 Tinian Is, 5V, ZK3, A3, S8 Transkei, PY0 Trinidade Is, 9Y, ZD9, FR/T, FO8 Tuamotu Arch, FO8 Tubuai Is, 3V, TA, UH8 Turkimen, VP5 Turks & Caicos Is, IA Tuscan Archipelago, KH8 Tutuila Is, T2, 5X, UB/RB, A6, 4U1 Geneva, 4U1 UN NY, 4U1 UN Vienna, WKNA USA, CX, IE9 Ustica Is, UI8 Uzbek, HV3, YV, 3W, KP2, KH9, GW, FW Wallis Is, ZS9 Walvis Bay, W2NSD/1 Wayne Green, KC6 West Caroline Is/Belau, DL Germany, 5W1 W Samoa, VK9 Willis Is, 4U1 World Bank, 7O Yemen, YU, VY1 Yukon, 9Q, 9J, 5H1 Zanzibar, Z2 Zimbabwe, and of course, add Eritrea, Slovenia, Croatia, B-Herzegovina and Macedonia.

The astute will have already noticed that, even though the above listed callsigns look like the wreckage of a typhoon, there is immediate recognition of the listings of actual geographical countries in alphabetical order. Also bear in mind that this listing is circa 1991, and that some "countries" have since been deleted from the actual ARRL list. Also many islands have been added to make your task more difficult.

The next Australian DXCC listings will appear in the August edition of *Amateur Radio*.

*PO Box 2175 Caulfield Junction 3161

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Contests

*Peter Nesbit VK3APN — Federal Contest Coordinator**

Contest Calendar Jun-Aug 95

Jun 3/4	RSGB Field Day CW	(May 95)
Jun 10	Merv Stinson Memorial (SSB)	(May 95)
Jun 10/11	ANARTS WW RTTY	(May 95)
Jun 17/18	WIA Novice Contest	(May 95)
Jun 17/18	All Asia CW DX Contest	(May 95)
Jun 24/25	ARRL Field Day	(May 95)
Jul 1	Australasian Sprint 80 m CW	
Jul 1	Jack Files Memorial 80 m CW	
Jul 1	West Australian 80 m CW	
Jul 1	NZART 80 m Memorial Contest	
Jul 1	Canada Day CW/Phone	
Jul 1/2	Venezuela SSB DX	(Jun 94)
Jul 8	Australasian Sprint 80 m Phone	
Jul 8	Jack Files Memorial 80 m Phone	
Jul 8	West Australian 80 m SSB	
Jul 8/9	IARU HF Championship	
Jul 22/23	Venezuela CW DX	(Jun 94)
Aug 5/6	YO DX Contest	
Aug 12/13	Worked All Europe CW	
Aug 12/13	SARTG RTTY Contest	
Aug 12/13	SEANET SSB DX Contest	
Aug 19/20	Keyman's Club of Japan (CW)	

Anyone who is not yet active on 80 m should rectify the situation forthwith, in preparation for a couple of extremely interesting evenings in early July. This year, for the first time ever as far as I am aware, the various Australian sprints have been coordinated to take place on the same evenings, ie 1 July for CW, and 8 July for SSB. To make things even more interesting, the NZART Memorial CW Contest also runs on 1 July, coinciding with our CW sprints. Consequently, the band should be well and truly jumping with activity both nights, not to mention the extra appeal of trans-Tasman QSOs on 1 July. Even the hot-shots will be kept on

their toes; but isn't that what sprints are all about? The organisers of these events are to be commended for their forward thinking and mutual coordination, so let's get on and show them just how busy 80 m can be!

Entrants in the different contests are, of course, allowed to work each other; and, in fact, inter-contest working as such is encouraged. Also, you can submit logs in any, or all of them, as you wish.

My suggestion is to use a single log and (unless you're sending a Shire Code) to use a single set of serial numbers for all of them. Then, after the event, either extract the relevant QSOs into separate logs for each contest, or else photocopy the log and highlight the relevant QSOs. Just make sure you only claim points for the QSOs which are relevant! Gaps in the numbers sent during a particular contest are of no consequence, providing you mention in the log where they were used. These guidelines are, by the way, equally applicable to other contests as well.

Because things will be happening very quickly on the day, I strongly recommend that you read and understand the rules well before the starting time. To minimise the possibility of confusion, make up a chart showing (1) who you can work, (2) when and how often you can work them, (3) the type of number you should send, and (4) the type of number you need to receive. With a little bit of organisation, things should flow smoothly, and you should have a great deal of fun!

On a more conventional note, the unusual but nonetheless popular ANARTS RTTY contest takes place this month, and for once the Canada Day Contest is on a weekend (an opportunity to work VOs and CYs on 80 perhaps?) Finally, the IARU HF Championship takes place in late July. I'm not sure if any VKs are joining one of the teams in Washington this year, but if they are, I am sure you will join me in wishing them the best of luck.

I had hoped to include a full list of VK4 and VK6 Shire Codes in this month's column but, with the results of the VK/ZL DX Contest arriving from NZART, unfortunately there wasn't enough room. So, if you're a VK4 or VK6 and unsure of your Shire Code (for the sprints), please refer to this column for June 93 (VK4), or June 94 (VK6). Alternatively, a call to the relevant contest manager, your local divisional office, or else myself on 03 9525 5300, will have it sorted out.

Many thanks this month to VK4LW, VK5OV, VK6NK, VE2ZP, ZL1AAS, *CQ*, *QST*, and *Radio Communications*. Until next month, good contesting!

73,
Peter VK3APN

10th Australasian CW and Phone Sprints

1 July (CW), 8 July (Phone); 1100-1159z Sat.

Presented by David Box, VK5OV

The Adelaide Hills Amateur Radio Society is pleased to announce the 10th Australasian Sprints, which are open to all amateurs and SWLs in VK, P2 and ZL. The object is to make (and SWLs to hear and log) as many contacts with amateurs in VK, ZL and P2 as possible, without duplication, on 80 m during a one hour period. Groups of amateurs using a single callsign, eg clubs, are also eligible. Frequencies are 3500-3700 (CW) and 3535-3700 (phone). Call "CQ Sprint", "CQ Contest" or "CQ Test". RS(T) is optional, and the minimum exchange is a serial number starting at any number between 001 and 999, reverting to 001 if 999 is reached. (Note: RS(T) will be required for QSOs with contestants in any of the other

VK or NZART contests, which take place at the same time).

For each QSO, logs must show the date and time (UTC), callsign worked (or both callsigns for SWLs), and serial numbers sent and received. Logs must be accompanied by a summary sheet showing the name and date of the sprint, the operator's name and address, points claimed, a declaration that the operator has observed the rules and spirit of the contest, and any additional interesting information. Multioperator/club entries must show the callsigns and names of all operators.

Send logs to *AHARS, PO Box 401, Blackwood, SA 5051* to be received by Friday, 11 August, with the envelope endorsed CW, Phone, or SWL Sprint. Alternatively, logs can be sent via packet to VK5AOV@VK5WI.#ADL.#SA.AUS.OC.

Certificates will be awarded to the highest scoring station (and SWL) in each VK, ZL, and P2 call area in both the CW and Phone sections. Trophies will be awarded to the outright winners of both. A certificate will also be awarded to the highest scoring Novice entrant in the CW Sprint, providing that the recipient is not entitled to another CW Sprint award. Other awards may be made at the Contest Manager's discretion. Standard disqualification criteria apply, and the Contest Manager's rulings and decisions are final.

1995 Jack Files Memorial Contest

1 July (CW), 8 July (Phone); 0800-1400z Sat.

(Presented by Rick Chilcott, VK4LW)

This contest honours the late Jack Files, a long-serving VK4 WIA Councillor. The object is for amateurs throughout VK/P2/ZL to work VK4s for the "Worked All Queensland" and other awards, to encourage portable/mobile activity from the less populated VK4 towns and shires, and to serve as a warm-up for the Remembrance Day contest.

Sections are: (a) Single Operator Home; (b) Club Fixed; (c) Single Operator Mobile/Portable; (d) Club Mobile/Portable; (e) Stations outside VK; (f) SWL. Operate on 160, 80 and 40 m. If using 160 m, please avoid interfering with any DX operations. No cross band.

Exchange RS(T), followed by (for single operator stations) a serial number starting at 001 and incremented by 1 for each QSO, continuing when changing bands; or (for multi-transmitter stations) a serial number starting at 001 for each band; or (for VK4 entrants) a two letter shire code.

Score one point per QSO with non-VK6, and two points per QSO with VK6. Each VK4 Shire/Town Code per band counts as a multiplier, also each prefix per band. To stimulate portable/mobile activity, portable/mobile stations can also claim one multiplier per band for each VK4 Shire/Town from which they operate. The final score equals total points times total multiplier.

In this contest only, single operators are allowed to have a log keeper. Club stations can use multiple transmitters, providing there is only one station on each band at any one time. These transmitters need not be co-located, and may even be in different shires. Note: *Stations can be re-contacted on the same band after 1 hour.* Contacts with entrants in other contests are valid, and those with VK6 stations are encouraged.

Attach a summary sheet showing the name, address and callsign of the entrant, section entered, points claimed, and a declaration that the rules and spirit of the contest were observed. Send logs to *Rick Chilcott VK4LW, Awards Manager WIAQ, GPO Box 638, Brisbane QLD 4001* to be

received by Monday, 7 August. Trophies will be awarded to the highest scorer in each section and the highest Novice overall, providing there are at least five entrants in that section. Certificates will also go to the three highest scores in each section.

19th West Australian 80 m

1 July (CW), 8 July (SSB); 1030-1330z Sat.
(Presented by Cliff Waterman, VK6NK)

The object of this contest is to promote contacts between VK6 and the rest of Australia and overseas, and for SWLs to hear and log as many VK6 stations as possible. All contacts must be made in the 80 m band. Call "CQ WA", "CQ WAA", or "CQ Contest", keeping CQs brief (three x three max), as excessively long CQs risk disqualification! Prearranged contacts are not allowed.

VK6 stations will send RS(T) plus Shire Code. All others should send RS(T) plus a serial number commencing at 001. Stations may be worked twice on the night, ie once during 1030-1300z, and again during 1300-1330z.

VK6 stations should claim five points for each QSO with VK6, two points for VK1/2/3/5/8, six points for VK4, four points for VK7, and ten points for VK9/0 and overseas. Stations outside VK6 should claim three points per QSO. Multiply the total number of points by two per VK6 Shire worked. Note: VK6 stations north of the Tropic of Capricorn should apply a further multiplier of 1.3 to their overall score.

Log sheets should be headed with the date and operator's callsign, and include UTC time, callsign worked, RS(T) sent, RS(T) and shire code received, shire multiplier, and points claimed. Total the points on each page and bring the running total forward. Attach a summary sheet showing total points, Tx power, equipment and antennas used, declaration that the rules and spirit of the contest were observed, plus any comments. SWL participants score as above using the outgoing Tx score.

Address logs to *WAA Contest Committee, C/o 1 Cottrill Street, Myaree WA 6154* and post in time to arrive not later than 4 August for both contests.

NZART 80 m Memorial Contest (CW)

1 July, 0800z-1400z Sat.

VKs are invited to join ZLs in this yearly contest to commemorate amateurs lost in World War II. It is open to single operator stations on 80 m, fixed and mobile. The contest has six operating periods, each of one hour, from 0800z-1400z.

A station may be contacted TWICE during each operating period, once on phone and once on CW, providing that such contacts are not consecutive. Exchange RS(T) plus serial number commencing at any number between 001 and 300 for the first contact. On phone, score 15 points for the first QSO with a scoring area, 14 points for the second QSO with that area, descending to one point for the 15th and subsequent QSOs with that area. The same scoring system is used for CW, except that QSO points remain at five for the 11th and subsequent QSO with that scoring area. Scoring areas are VK and ZL prefixes/areas, and DXCC countries. The rules for SWL entrants are similar except that the callsigns of the stations heard and being worked must be given, and only the cipher of the station heard is required.

Send logs and summary sheets ASAP to *Memorial Contest, PO Box 20 332, Auckland 7, New Zealand.* Nominate the category entered (Open; Phone; CW; Beginners CW; QRP; Homemade SSB), and include a points summary showing the number of QSOs and points for each VK/ZL call area worked. Certificates will be awarded to the top three scoring VKs.

Canada Day Contest (CW & Phone)

1 July, 0000z-2359z Sat.

This popular Canadian contest, which runs on 1 July each year to celebrate Canada's confederation, occurs on Saturday this year. This is good news for those VKs who are unable to participate during the week, as it is a good opportunity to pick up some VOs, VYs, CYs, etc.

Bands are 160-2 m, CW and phone. Suggested frequencies are (CW) 25 kHz up from the band edge, and (SSB) 1850, 3775, 7075, 7225, 14175, 21250, 28500. Check for CW activity on the half hour. Note: CW QSOs in the phone sub- bands, and phone QSOs in the CW sub-bands, are invalid.

Any station can work any other for QSO credit, and you can work the same station once on each band and mode. Exchange RS(T) and serial number; Canadians will send RS(T) and province/territory. Score 10 points for Canadian QSOs including VE0 (ie maritime mobile), and two points for others. Canadians with RAC suffixes are worth 20 points. Multiplier is Canadian provinces and territories (max 12), and count once per band and mode: VO1/2 (Newfoundland); VY2 (Prince Edward Isl); VE1/CY9/CY0 (Nova Scotia); VE2; VE3; VE4; VE5; VE6; VE7; VE8; VE9; VY1 (Yukon). Final score is QSO points x multiplier. Send log and summary sheet in standard format, including dupe sheet, by 31 July to *RAC, PO Box 356, Kingston, Ontario, K7L 4W2, Canada.*

Venezuela DX Contest

1/2 July (SSB), 22/23 July (CW); 0000z Sat to 2400z Sun.

For rules, see this column, June 94.

10th IARU HF Championship

8/9 July, 1200z Sat to 1200z Sun.

This popular contest runs on the second full weekend of July each year. Bands are 160-10 m. Categories are single operator, CW only, phone only, mixed; multioperator single transmitter mixed mode only. Multioperator stations must remain on a band for at least 10 minutes at a time (with the exception of IARU member society HQ stations which may operate simultaneously on more than one band with one transmitter on each band/mode, providing only one HQ callsign per band is used).

Exchange RS(T) and ITU zone (P2 = 51, VK4/8 = 55, VK6 = 58, and VK1/2/3/5/7 = 59). HQ stations will send RS(T) and official society abbreviation.

Claim one point for QSOs within own zone or with an HQ station, three points for QSOs with a different zone in own continent, five points for QSOs with different continents. Multiplier is total ITU zones plus IARU HQ stations worked on each band. Final score is total QSO points from all bands x sum of multipliers from each band.

Include a dupe sheet for 500+ QSOs. Send logs postmarked by 9 August to *IARU HQ, Box 310905, Newington, CT 06131-0905, USA.* Official forms and an ITU zone/prefix/continent map can be obtained from the same address on receipt of a large SASE with two IRCs or equivalent. Certificates to the top scorers in each category, in each state, ITU zone, and DXCC country. Also, stations with 250+ QSOs or 50+ multipliers will receive achievement awards.

Results of 1994 IARU HF World Championship

(call, score, QSOs, multipliers, class):

Zone 55:				
VK4EMM	318,240	648	104	CW
VK4EET	132,840	364	82	CW
VK4TT	4,950	69	15	CW
Zone 59:				
VK2VM	27,324	118	54	Mixed
VK5GN	91,350	304	63	Phone
VK2APK	364,302	696	111	CW
VK2AYD	152,978	345	98	CW

RESULTS OF 1994 VK-ZL-OCEANIA DX CONTEST

Presented by John Litten, ZL1AAS

CONTINENTAL LEADERS:

CONTINENT	SINGLE OPERATOR		MULTI OPERATOR		SWL
	PHONE	CW	PHONE	CW	MIXED
Oceania	VK5GN	VK2AYD	VK1DX	—	—
Africa	—	—	—	—	—
Asia	JA3USA	UA0JQ	RK0Q	RU0L	JA4-4665/1
Europe	US1DX	HB9ADD	UU5J	UT7WZA	OM3-0001
North America	VE7SV	K7QQ	—	—	—
South America	PR7FB	—	—	—	—

(Shown in order: Callsign, Band, Band Scores, Final Score. Band Score = Band Points x Band Multiplier; Final Score = Total Band Points x Total Multiplier. * = Certificate Winner)

CALL	BND	160	80	40	20	15	10	SCORE
PHONE, SINGLE OPERATOR:								
Oceania:								
DU1SAN *	20				34034			34034
VK1JE	160	240						240
VK1JR *	A	80	210	1254	23714			50064
VK1KLB	80		1320					1320
VK2APK *	A	20	480	19345	56661	29160	192	393792
VK2ARJ	A		2900	600	13904	11252	12	118944
VK2IVK	A		1360	1190	8541	107748		163296
VK2PS	A	180	1800	210	4350	6192	48	62744
VK2QG	A			5510	29082	37168	3	205146
VK2VM	A	20	1530	315	30960	7384		122166
VK2XT	A	560	4500	405	27025	56576	12	346724
VK3EW *	A	3640	102300	39990	17820	39750		1075125
VK3TZ	A	1200	98640	23180	51086	13482		931380
VK4BB	20				12900			12900
VK4LEE *	A		450			27216		36846
VK4OD	A				483	1748		4356
VK5GN *	A	40	5720	69825	64702	187520		1187145
VK5OE	20				1764			1764
VK6WOG *	A		200	910	21094	76160		226969
VK8BE *	20				484			484
YB2BKJ	A			20	975	672	3850	17009
YB6ZZ *	15						39208	39208
ZL1JAW	80		6500					6500
ZL1RGR *	A		2300	5	19			7620
ZL2TT *	20				17877			17877
Asia:								
BV2FI	A				100	253	468	2400
BV2CD/7 *	A					300	1378	3275
JA1AAV	A					6	8	28
JA1AB	A				5	60	168	559
JA1HF	A				45	88	270	1120
JA1IT	A					12	96	180
JA1JLP	15						210	210
JA1KVT	15						1560	1560
JA1STY	15						208	208
JA1YKX	A				2030	696	2482	72	17249
JG1EHF	20					28			28
JG1GCO	15						32		32
JG1JQJ	15						270		270
JG1RRU	20					1			1
JG1TVK	15						360		360
JH1RMH	15						48		480
JH1TYU	15						208		208
JH1UUT	A				40	200	638		2024
JI1RCB	15						24		24
JN1FRL	15						70		70
JN1OVF	40				240				240
JQ1TTB	A					198	256		918
JR1MRG	A				20	24	256		672
JA2ESR	40				385				385
JA2GHP	15						440		440
JA2IZA	15						154		154
JE2IEQ	20					1444			1444
JH2HFD	40				75				75
JH2WHS	15						48		48
JJ2QX1	20					63			63
JK2VOC	15						160		160
JL2HUJ	15						192		192
JR2TRC	15						2		2
JA3SSB	20					60			60
JA3USA *	A			40	3440	931	3306	18	27086
JF3EIU	10							120	120
JI3MVO	A					70	192		546
JQ3JUG	15						132		132
JR3KAH	15						96		96
JA4CUU	A				140	465	342	3	3103
JA4ESR	A				20	153	220		1029
JK4DBT	20					432			432
JA1XCZ/4	A					15	374		546
JE4VSC	20					512			512

CALL	BND	160	80	40	20	15	10	SCORE
JG4OOU	15					18		18
JH4OYA	15					20		20
JL4CMT	15					702		702
JR4GPA	15					858		858
JA5IP	20				98			98
JA5JP	A				112	288		800
JA5OP	15					1260		1260
JA6QDU	20				12			12
JA6YJQ	15					18		18
JE6FPP/6	A				16	182		330
JL6ATQ	15					154		154
JN6XCZ	15					48		48
JS6GIM	A			5	77	720	6	1722
JA7ASD	A			20	84	320		1054
JA7AXP	20				45			45
JA7BEW	A			45	330	800		3000
JA7EID	A			1035	384	2484	18	12054
JA7ODY	40			1375				1375
JA7LVK	15					50		50
JA8SW	A			20	72	256		864
JA9KUG	20				128			128
JA9XAT	20				12			12
JA9XBW	20				60			60
JR9NVB	A			20	84	210		832
JA0CJK	15					196		196
JA0HYU	A				30	18		96
JE0EHE	15					672		672
JF0SGW	20				198			198
JH1BXH/0	10						216	216
JH0HON	15					420		420
7L1JHN	10						189	189
RK9CYA	20				8			8
RK9UZT	A		10	1440	420	832		8702
RW9WA	20				240			240
RK0SXF	A			100	128	856		2675
UA0JQ *	A		10	3420	896	2516		21008
UA0SJ	20				280			280
Europe:								
DL3KDV *	A			440	297	84		2400
DJ5LA	20				952			952
DL7UBA	20				170			170
EA3BOX *	20				4			4
G3NAS *	A		120	60	216	168		2331
HB9IK *	A		10	600	70	540		4061
IK4SWX *	A			40	280	196		1444
JW8GV *	20				72			72
LY2OU *	A		40		15			564
LZ1PM	40			100				100
LZ1ZJ *	40			245				245
OH3MIG *	20				15			15
OZ5KF *	20				290			290
OZ8T	A				4	18		40
PA0KDM *	15					8		8
RA3XO *	20				48			48
RZ4AYT *	20				48			48
UA6ART	20				2			2
US1DX *	A		10	630	672	160		4736
UU2JQ	A				12	8		40
UX2VZ	A			120	312	50		1386
UT4I	A		10	45	854	260		3136
SM2KAL *	A				24	108		240
SM5BUS	20				8			8
SM0KV	15					192		192
SP2FOV *	20				153			153
SP5CJQ	20				80			80
SP7VCK	A				6	8		30
SP8EEX	20				15			15
North America:								
VE7SV *	A		700	5440	300	252		21199
WB0O *	A		20	100		80		610
PHONE, MULTI-OPERATOR:								
RU0L	A		10	350	800	238		4464
RK0Q *	A			6615	1080	1008		22608
VK1DX *	A	80	5400	3770	18530	104788	3	473760
CHECK LOGS:								
BV2A, SP8GEY, VK4VHF								
CW, SINGLE OPERATOR:								
Oceania:								
V63KZ *	A		6300	12180		19370	840	134616
VK1FF *	40			141240				141240
VK2AYD *	A	80	25620	28420	17136	36200	1020	1263140
VK2PS	A	40	2660	15640		5280		70902
VK2QF	A				8632	16422		51984
VK2VM *	20				26460			26460
VK2ZC	A		3000	15435	1050	798		66896
VK3APN	40			23010				23010
VK3KS	A				64	18		154
VK3TI *	A		1540	81885				106590
VK3XB	A		240	245	270	646		6493
VK4AAR	20				61380			61380

CALL	BND	160	80	40	20	15	10	SCORE
VK4EMM *	40			960840				960840
VK4TT	20				37200			37200
VK4XA	15					32400		32400
VK5AGX *	20				12420			12420
VK6HG	A		280	8100	1435	6336	330	63973
VK6IT	40			18200				18200
VK6IV	40			22940				22940
VK6ZH *	A			105875	27797	58320	810	634280
YB2BKJ	A		40	650	812	312		7280
YB2UDH	20				4960			4960
YB6TI *	15					31878		31878
YJ0AAY *	A		16120	9540	342			68340
ZL1AIZ *	A	1260	77280	99475	672	11590	3	660922
ZL1AIH	40			1710				1710
ZL1HV	15					8580		8580
ZL2AGY *	40			772350				772350
ZL2VS	40			490620				49620
ZL3GQ *	40			1254170				1254170
ZL4QY *	80		8800					8800
Asia:								
HL5AP *	A			30	84	144		765
JA1AAT	A				9	56		119
JA1AB	A			100	30	70		630
JA1AUD	A		360	880	84	460		6732
JA1KVT	15					990		990
JE1SCJ	A		10		30	50	3	348
JE1SPY	80		40					40
JE1VTZ	15					702		702
JG1RRU	A			120		2		160
JG1UKW	15					108		108
JH1BDS	A			75	40	48		517
JI1RCB	A			80	16			192
JK1JHB	40			120				120
JK1VSL	20				9			9
JM1NKT	40			520				520
JM1THS	40			400				400
JO1QZI	40			350				350
JQ1VNM	A		90	480	84	380	90	5214
JA2ESR	40			675				675
JA2GTW	40			765				765
JA2KPV	40			675				675
JA9DDF/2	A			600	66	42	12	1911
JR7OMD/2	40			900				900
JE2IEQ	10						84	84
JF2VIP	15					2		2
JH2ECB	15					696		696
JH2XTV	15					70		70
JK2VOC	A			175		48	12	583
JL2LPX	A			330	4	40		804
JQ2FFS	40			175				175
JA3ARM	A			440	170	256	12	3080
JE3CYH	20				4			4
JA3EA	A		40	800	98	132		3400
JA3JOT	10						3	3
JE3UHV	A			60	28	96		559
JF3IUC	A			900	253	660	27	6370
JQ3JUG	40			180				180
JA4CUU *	A		160	675	190	696	60	8073
JA1XCZ/4	A			45	1	100	12	462
JA4ESR	A			350	24	126		1332
JH4OYA	A				1	56		75
JR4GPA	15					120		120
JA5OP	15					126		126
JA6BWH	A			210	1	24		440
JA6GCE	40			760				760
JA6TO	15					320		320
JH6SQI	15					60		60
JA7ASD	A			350	1	306		1445
JA7JW	A			175	48	24	3	810
JA7ODY	15					920		920
JF7OUE	15					126		126
JA8AJE	A			20	42			136
JA9XAT	20				4			4
JA9XBW	40			850				850
JA9ZRF	15					108		408
JR9NVB	A			80	15	192		735
JA0LFV	15					216		216
JG0WLS	40			990				990
7K1EQG	15					108		108
7M2MEF	A				180	720	90	2592
RW9WA	A			1875	640	380	3	8652
RW9WM	40			175				175
UA9USK	15					120		120
UA0JQ *	A		200	2325	384	884	27	14758
UA0LCZ	A		90	1045	98	154		4508

CALL	BND	160	80	40	20	15	10	SCORE
Europe:								
DF3OL	A			350	60			671
DL3RD	20				144			144
DL6YK *	A			350	112			924
DL7VOX	A			60	6			115
DJ9RR	40			520				520
EA3ALV *	A		10	180	8			352
EA5CKP	A			75	18			186
EA5SM	40			245				245
ER1OA *	A			80	84	12		494
EW2AA	20				170			170
EU6EU *	A			175	66	2		576
G3GLL *	A		10	315	35			808
G5MY	A			315	6			423
G0TDX	40			5				5
GM3ITN *	A			650	12			897
HA5BSW	A			30	60			189
HA5LZ *	A			400	154	2		1320
HA8IE	A			100	128	12		658
HB9ADD *	A		10	480	448	48		3078
HB9IK	A		10	585	315	18		2856
IK2BUF *	A			495	32	2		910
I0ZUT	A			200	27			392
LA8WG *	20				18			18
LZ1LZ *	A			900	184			2034
OH3MIG	20				16			16
OH6IU *	20				28			28
OH0/OH3TY *	A			385	112			1035
OK1AD	20				144			144
OK1ZJ *	A			60	20			175
OK1ZJ	20				112			112
OK2SBJ	A			60	1	2		115
OM3MB *	A			20	72			180
OZ1EUO *	40			45				45
PA0LOU *	A			30	98			261
RA3XO *	A			315	81			864
RZ4AYT	A			60	4	2		144
SM0DZH *	40			45				45
SP1MHV	40			175				175
SP2FOV *	20				190			190
SP2PI	20				54			54
SP5CJQ	20				56			56
SP8SYF	20				30			30
SV2AP	A		350	32	8			792
UU2JA	A		100	15	2			256
UU2JQ	20			12				12
UY5ZZ	20			220				220
UT7QF *	A			800	290	30		2737
YL2DX *	A		10	100	276			986
YU7SF *	40			20				20
ZA1AJ *	40			75				75
9A2AJ *	A			315	280	8		1406
North America:								
HP1AC *	20				4			4
VE3MX	40			45				45
VE7BS *	160	320						320
WB2DVU	40			5				5
N6RO	A	2200		2310	16	414	3	16302
K6XO	A		10	400	12	48		1216
K7QQ *	A	720	2100	2700	351	624		32984
South America:								
PR7FB *	20				1			1
CW, MULTI-OPERATOR:								
UU5J	A			5	286	50		703
UR7IYU	A				9	2		20
UT7WZA *	A			200	242	80		1638
CHECK LOGS:								
VK2APK, SM2KAL, SM2UJW, SP8GEY								
SWL, PHONE:								
DE1TKW *								72
JA4-4665/1 *					60	304	3	765
SP-3003 LG *				245	152	8		986
SP-0189 GD					20	8		54
OM3-0001 *		160	150	260	4			2000
OM3-27707				60	390	18		1040
ONL-383 *			5	35	2			98
UA9-154-800*					144	8		220
SWL, CW:								
JA4-4665/1 *				100	12	132		663
JA9-2421					96			96

**PO Box 2175, Caulfield Junction, VIC 3175*

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Divisional Notes

Forward Bias — VK1 Division Notes

Peter Parker VK1PK

Mt Ginini Repeaters Vandalised

Amateur communication in the Canberra area suffered a setback over the Easter weekend as thieves made off with the VK1RGI, Mt Ginini two metre voice and packet radio repeaters. The repeater's shed was broken into at about 10.15 pm on Saturday, 15 April. The door was severely damaged, cables were cut and all equipment, except the cavities, removed. Also stolen was a UHF CB repeater. Fortunately, the 70 cm repeater was being worked on, so it was not taken.

Police are investigating. Amateurs are requested NOT to discuss this matter on-air, and should contact the Divisional President, Rob Apathy VK1KRA on (06) 247 0387 if they have any information, no matter how insignificant, that may assist the investigation.

The following equipment was stolen:-

2 m FM Voice Repeater: Philips RX814/TX814 combination. Many internal modifications, particularly to the receiver. Includes a Transmit programmable encoder, Fabelec Repeater Control Board, Selectone ST104 CTCSS decoder (186.2 Hz), Sigtec C116 access decoder (97.4 Hz) and custom interface board with 555 IC.

2 m Packet Repeater: Philips FM828 (25 W out) on 144.800 MHz in rack mounting tray. Companion TNC included.

UHF CB Repeater: Philips RX815/TX815 with internal modifications, AEA ferrite isolator, Fabelec repeater controller mounted in receiver.

Lambda Programmable Power Supply — 12 V, 20 amps.

A special Divisional meeting on 24 April established a repeater fundraising committee composed of amateurs keen to see the restoration of our full complement of repeaters. The following local amateurs are on the Committee: VKs 2EJC (Convenor), 1KMP, 1ZRB, 1ZBG, 1KTM, 1KCM, 1ZDJ and 1ZAO.

Rebuilding a repeater of the calibre of the Mt Ginini installation is a very costly and time-consuming task, and your patience is requested; completion and installation are unlikely before early 1996. Work on repeater linking has been postponed for the time being. Donations to the Repeater Fund from ALL amateurs (WIA members or not) are welcome. Post your contribution to VK1 Repeater Restoration Committee, WIA ACT Division, GPO Box 600, Canberra, 2601 (Phone (06) 247 7006).

Contributions from the other users of the Mt Ginini site are also being solicited.

On a brighter note, our 438.525 MHz 70 cm repeater will be moved to Black Mountain. This will provide an excellent coverage of the city area and beyond. It should be operational later this year. Thanks to Paul VK1BX and Rob VK1KRM for their work on this project and efforts in maintaining the Mt Ginini site over many years.

VHF Notes

The demise of the Mt Ginini repeaters does not mean an end to long-distance VHF operation from Canberra. Thanks to well-equipped stations such as VK2DVZ, VK2FLR, VK2ZAB and VK3BRZ, VK1 2 m SSB operators enjoy regular contacts with places like Sydney, Taree and Melbourne. The time to listen is around 8 am local, when there is often activity on 144.200 MHz during the weekends. Sydney stations can be contacted with a few watts into a small Yagi if you are on a good hill (there are many around Canberra, maybe even in your suburb). Beacons to listen for include Sydney on 144.420, and Geelong on 144.530. With Mt Ginini off the air for some time, and summer approaching, there is now no better time to upgrade your VHF/UHF station in time for the coming Remembrance Day, Ross Hull and VHF Field Day contests.

Junk Sale at this Month's Meeting

Mark Monday, 26 June in your diary as this is the evening of the VK1 Division's Radio Junk Sale. Starting after the June General Meeting at the Griffin Centre, Civic, you're sure to find some esoteric part or accessory you have been after for months. Now is the time to clean out your overflowing shed or junk box and pass on your bits to someone who will use them. Be there by 7.30 pm.

Theory Lecturers Wanted

Do your part in training tomorrow's amateurs — volunteer to become a Theory lecturer for the 1996 Divisional AOCP/NAOCP amateur radio course. The weekly classes normally run for 33 weeks, and each session takes about two hours. Contact Graeme VK1GN on 295 3008 if interested.

Internet Talk a Success

The highlight of April's WIA meeting was a talk given by Don Nethercote from the ACT Education Department on the exciting world of Cyberspace. The use of a large projection screen made it possible for all to comfortably view the display. We thank Don for a most interesting presentation, and Athol VK1JAG for organising it.

Thanks

The quality of this column should start to improve, the *Amateur Radio* editor will be happier, and I'll use much less correction fluid as *Forward Bias* is now written on computer. My thanks to Richard VK1RJ and Peter VK1NPW for their efforts in making this come about.

VK2 Notes

Richard Murnane VK2SKY

AGM and Council Election

The Division's court application to call an AGM and hold fresh elections, was heard in late April, and went through **unopposed.** Consequently, as advised in the insert to *Amateur Radio* last month, the Annual General Meeting has been set down for Saturday, 1 July.

The venue for the AGM is Doonside Community Centre, where the last AGM and preceding two EGMs were held. In response to feedback from country members, Council has retained this venue, to spare attendees from outside Sydney the ordeal of dealing with city traffic.

Please note also that the meeting will take place on **Saturday,** rather than the traditional Sunday, so you will still have some of the weekend left when the AGM is over. The start time will also be earlier, 11 am, allowing the meeting to end earlier, so country members can get back home at a respectable hour. There will be a break for lunch, so you won't starve either.

It is important for the VK2 Division to put itself back on a sound footing in order to serve the needs of New South Wales amateurs effectively. Whether or not you attend the AGM, please read the Council reports carefully, and register your vote for the 1995-96 Council. The information contained in the reports is more reliable than some of the comments you are likely to read on packet.

A selection of publications from the Divisional Bookshop will be on sale during the break, so you can stock up your library while you're there, and save yourself the postage and packing.

Licence Fees Again (Still)

Have you sent your fees submission to the Division yet? How about a list of specific examples where you or your local club has used amateur radio to assist your community. The government has asked the VK2 Division to produce another submission, with a view to setting a level of fees that reflects the true worth of the amateur service to Australia, and we still need *your* input.

This submission must represent a consensus view of amateurs all over Australia, so the VK2 Division is seeking contributions from all Divisions.

Thought for the month: The progress of the world is the history of men who would not permit defeat to speak the final word.

VK6 Notes

John R Morgan VK6NT

Annual General Meeting

At the AGM, held in Perth on 17 April 1995, the following were elected to the VK6 Divisional Council for the year 1995/96:

President	VK6LZ	Cliff Bastin
Vice President	VK6DY	Don Reimann
Councillor	VK6ZLZ	Christine Bastin
Councillor	VK6HK	Don Graham
Councillor	VK6OO	Bruce Hedland-Thomas
Councillor	VK6UU	Will McGhie
Councillor	VK6NE	Neil Penfold
Councillor	VK6TS	Tony Savory
Councillor	VK6IW	Dave Wallace

The VK6 Division meets on the third Tuesday of each month, at the Westrail Centre, East Perth, commencing at 8 pm. The bookshop and QSL bureau open at 7 pm. All interested persons (members and non-members, licensed or listener) are encouraged to attend these meetings. Coffee and biscuits are available at "half time".

Progress at VK6QC

From Rob VK6VP comes news of progress from the WIA-affiliated club station at the Para-Quad Centre in Shenton Park, Perth.

After 18 months of negotiations, it was recently confirmed that provision has been made in the Centre's recreation budget for the purchase of an IC-707 HF transceiver (which has a built-in general-coverage receiver) and a new tri-band HF beam antenna. Funds have also been secured for a dual-band vertical antenna, which will be used for voice operation on 2 m and 70 cm FM.

On the first week-end in May it was planned to lower the tower for about six weeks of refurbishment work, including the re-galvanising of some parts.

Never one to be idle, Rob is now looking for a way to replace the Club's 2 m transceiver, which expired in mid-April, and also to upgrade the packet station's mono-screened 286 PC.

WA Repeater Group AGM

This well-attended meeting was held on the evening of Monday, 1 May 1995. The following members volunteered to serve on the committee for the next year:

President	VK6MS	Trevor Solomon
Vice President	VK6LZ	Cliff Bastin
Secretary	VK6JKR	Jeff Richards
Treasurer	VK6YBP	John Bearsby
Technical Officer	VK6UU	Will McGhie
Membership	VK6ZLZ	Christine Bastin
Committee	VK6JI	Chris James
Committee	VK6ZTN	Joe Nevin
Committee	VK6NT	John Morgan

Charlie King VK6ZCK and Cliff Bastin VK6LZ were appointed as the auditors, and the following members volunteered to act as managers for each of the Group's repeaters:

VK6RAP	VK6UU	Will McGhie
VK6RBN	VK6QB	Ron Baker
VK6RCT	VK6ZPE	Peter Eaton
VK6RHW	VK6CA	Jim Nicol
VK6RLM	VK6UU	Will McGhie
VK6RMS	VK6ZTN	Joe Nevin
VK6RMW	VK6LZ	Cliff Bastin
VK6RPD	VK6MS	Trevor Solomon
VK6RTH	VK6ZAQ	Renzo d'Orazio

WARG invites you to take part in its VHF net, held every Sunday morning, commencing at 10.30 am. Listen for VK6RRG on Perth repeater VK6RLM (146.750 MHz).

General meetings of WARG are held at the Scout Hall on the corner of Gibbs Street and Welshpool Road, East Cannington, on the first Monday of every odd-numbered month, starting at 7.30 pm.

Morse Practice Beacon

The Morse practice Beacon VK6RCW (147.375 MHz) has been installed at the new site in Welshpool, giving coverage of most of the metropolitan area. Feedback from users of this system will be appreciated.

Club Secretaries

Please note that all material for inclusion in this column must arrive on or before the first day of the month preceding publication. Items from country members and clubs will be especially welcomed. Write to PO Box 169, Kalamunda WA 6076, or telephone (09) 291-8275 any time. Packet mail may be sent to VK6NT@VK6ZSE.

"QRM" — News from the Tasmanian Division

Robin L Harwood VK7RH

Over the past weeks, there has been some discussion over the question of site fees. The Northern Branch, which has operated VK7RAA from Mount Barrow for 25 years, recently received a bill from the CAA as site fees. The budget of the Northern Branch is rather limited and it was felt that the amount requested was excessive. As there was a narrow deadline, the Branch president, John Gelston VK7JL, wrote to the CAA requesting more time to consider the options. The CAA has now replied and after consideration of the letter, the Northern Branch appointed a committee to negotiate with the CAA over the site fees.

Licence fees have been in the news for the past months and the increased licence charges have now come into effect. The Northwestern Branch, which has operated an ATV repeater for a number of years, were quite staggered to receive a licence fee of $345! Fortunately, it subsequently turned out to be a computer error and the licence fee should have been much less! Our thanks go to our Federal Councillor, Jim Forsyth VK7FJ and Federal President, Neil Penfold VK6NE, who managed to sort out this mix-up with the SMA Head Office.

In the March column I happened to mention that a hidden Fox would be operational on 146.000 MHz, prior to the combined North/Northwestern branch meeting at Deloraine. Well, the Fox wasn't activated and, as it has been pointed out that the chosen frequency was right at the end of the satellite band, any future activity from the Fox will be on another channel, well away from the satellite band. The Fox is pretty much a veteran coming from the days when all of the FM simplex activity was on channel "B". It is somewhat cumbersome and a more simple and yet sophisticated smaller device is the norm these days. Really, it is a museum piece!

The annual Targa Motor rally around Tasmania was held at the end of April. This event has become something of an institution although it has been only going for four years, with over 250 competitors. This year saw several celebrity competitors, such as Kirsty Marshall and Glenn Ridge, mix it with seasoned touring class drivers and rally champions. This year WICEN was again involved in providing communications back-up to the Targa comms. This mainly involves vehicle tracking during several of the stages where individual competitors are timed over a measured distance. These stages are held over stretches of the

normal highways and roads, which are closed to the general public whilst these trials take place.

Our WICEN ops were tracking individual cars as they negotiated these stages and notifying Targa officials of any vehicle who failed to complete the stage, so that recovery and/or emergency vehicles could be dispatched.

Thanks go to the many amateurs who were involved with the WICEN Exercise associated with Targa 1995 and a big vote of thanks must go to Divisional WICEN Co-ordinator, Tony Bedelph VK7AX, for organising it so capably. It certainly must have been a trial on the final day, especially on the Northwestern stages, in the pouring rain and mist. It truly was a miracle that there weren't any serious accidents.

Your Division now has an Internet address to which you can send e-mail messages. It is *wiatas@tamarcom.com.au*. It is not a BBS. However, WICEN Tasmania does have a Phone BBS, (004) 256035. Its Fidonet node is :3:670/403. Don't forget it is a voluntary run BBS and the Sysop is Tony VK7AX. A small contribution would be appreciated to assist with the upkeep of the BBS, if you would like to utilise the facilities.

The next Council Meeting will be held on 24 June. The venue will be the "Pizza Pub", at the corner of Frederick and Wellington Streets, in Launceston at 11 am. At the meeting, it is hoped that a meeting with Branch Executives will take place to discuss insurance and other associated costs with the operation of the various Branches.

Meetings for June are Southern Branch; Wednesday, 7 June at 2000 EAST, at the Domain Activity Centre (VK7OTC); Northwestern Branch, Tuesday, 13 June at 1945 EAST, at Penguin High School, Ironcliffe Road, Penguin; and Northern Branch, Wednesday 14 June at 1930 EAST, at the Launceston Institute of TAFE (Alanvale Campus) Block "B" Level C Room 17.

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QSP News

Historic Re-Broadcast

At 3.00 pm on Sunday, 7 May 1995 an historic broadcast was made from Great Britain, announcing the surrender of all German Forces in Europe. It occurred because of the cooperation of British Telecom's Portishead long range maritime radio station at Highbridge and the Morsecodian Society of NSW.

The thought that the cable announcing victory in Europe be re-enacted was made to the Federal, State and local Australia Remembers Committees but developed no interest. The Australian War Memorial was asked to advise how the news reached Australia, but wouldn't. The Imperial War Museum, London determined that it was a cablegram, but not the wording. The office of the Federal Member, Mr P Ruddock provided the wording of the cable within 24 hours.

With the message, but no official interest, yet determined not to allow this event to pass unmarked, on 2 May Portishead were faxed, requesting similar cooperation to that provided 18 months earlier for the Armistice message which had also been re-enacted. Guests then were 10 veterans of the Great War. A characteristically cheery telephone call that evening assured support. The Morsemen were contacted and all was set for Morsing the message by telephone line, call incoming at 3.00 pm, 7 May.

At the arranged 8.00 pm telephone call on 5 May to confirm details, Portishead's Radio Officer, Larry Bennett, announced that the station management and staff felt that such an historic occasion might also be broadcast, advised of frequencies 8591.5 and 12790 kHz, and asked if I would publicise the event.

Saturday, 6 May was frantic; how do you advise amateurs of an event at such short notice? Friends who might know operators were rung and asked to pass it on; critical time was wasted in awaiting return calls from one radio station; one Sunday paper wasn't interested; the local community radio station wasn't organised; Wireless Institute telephones advised no weekend service. Fortunately, the Dural, Sydney transmitter answered on Sunday morning. A determined conversation followed; the event was now less than five hours away.

The telephone rang. Our small party, listening to the signal and watching the Morsecodians write, felt mixed emotions. No message in history was preceded by more human misery or devastation, yet offered so much hope to the world. We lifted our gaze across the valley to the mast at Dural. Five minutes later the telephone rang. A chap 30 miles away across Sydney had heard the broadcast. Dural had announced the event and the message from half a world away had got through both by "cable" and wireless.

Both BT, c/o RO Larry Bennett, BT Radio Station, Highbridge Somerset, England who will issue QSL cards, and myself, originator of the idea, address below, would value correspondence from anyone who heard the broadcast.

George Cochrane
23 Western Crescent
Westleigh NSW 2120

Education Notes

Brenda M Edmonds VK3KT Federal Education Coordinator.*

The IARU Region III Conference in Bandung in 1991 set up a Task Force for Promotion of Amateur Radio in Developing Countries (PARDC). Its brief was to consider ways in which the IARU and member societies can help with the establishment of amateur radio in countries which are not already actively involved. This committee reported back to the Conference in Singapore in September 1994, where it met for nearly a day to discuss progress and consider possible further action. As part of the considerations, the name of the Task Force was changed to "Support of The Amateur Radio Service in Region 3" (abbreviated to STARS***) to align it with a similar committee (STARS*) in Region 1. This change allowed it more scope to include promotional and support activities in all countries of the Region regardless of their level of development.

There are still a number of countries in Region 3 in which amateur radio is unknown, extremely rare or illegal. In addition, it was felt that amateurs and amateur societies in some other countries, while being permitted to operate, are not encouraged or looked upon with favour by the administrations of those countries, and that support from some of the more long established societies might help to increase the community standing of both individual amateurs and the societies. In some countries the authorities are known to oppose amateur radio in the belief that it poses a threat to the national security.

Why should the IARU and the established Societies become involved in these matters? There are many reasons, ranging from the "missionary" approach of wishing to spread the information on our hobby, to the more altruistic belief that a body of active amateurs has considerable resources to offer to their country; from the logical argument that more voices mean more strength at international level, to the purely personal desire for more countries on the DXCC list.

Perhaps the "how" is more important than the "why". In the years between 1991 and 1994 the IARU Secretariat in Japan began collecting text books, videotapes and other resource materials for distribution to some of these countries, and identified a small number of countries for the first distribution. It was agreed at Singapore that this approach should continue, with the Secretariat both storing and distributing collected materials and setting up a database for recording needs and responses.

A number of other strategies were considered and endorsed, including some which can be carried out by individuals as well as societies. A national body, such as the WIA, might become a "mentor" for an emerging society, to help in its approach to the local administration and to provide resources in the form of study materials, examination syllabuses and question papers, technical assistance and even some equipment. It might also sponsor the new society to technological symposia or IARU Conferences. An individual might form a similar bond with an individual in such a country, or be able to act as an ambassador for amateur radio on the occasion of a visit to the country. Region 1 provides a standard package of resource materials which are provided at the request of a country in need.

Several countries are presently negotiating with their administrations on topics which the WIA has covered in recent years. These include an increase in the number of levels of licence, administration of examinations, self regulation, and provision of civil emergency networks. The WIA should be able to provide considerable help in many of these efforts.

Other possible methods of contribution to STARS*** will be discussed in my next column, after which members may feel that they have other suggestions to offer. I am sure the WIA representatives on the STARS*** Task Force will be happy to receive any ideas.

**PO Box 445, Blackburn VIC 3130*

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How's DX

*Stephen Pall VK2PS**

From time to time, tucked away in the quiet corners of 40 and 80 metres, one hears interesting discussions. The other day somebody said that there are more than two million radio amateurs in the world. His discussion partner disputed this, quoting the total number of amateurs as listed in the well known "Flying Horse" call book as being 1,314,000. I am afraid the first person is closer to the mark. The Radio Amateur Callbook (North America and International) include only those amateurs for whom they have address listings.

The February issue of *QST*, the official publication of the ARRL, throws an interesting light on the question. Let me quote freely from that article.

How Many Hams?

According to the most recent statistics of the International Amateur Radio Union (IARU), there are 2.6 million licensed radio amateurs in the world. Whom does the IARU count as radio amateurs? In general, only those individuals who hold both an operator's licence and a station licence. In Japan, for instance, operator's licences are issued for life (as in Australia — Certificate of Proficiency) and the total number of operator's licences issued is well over two million. Station licences, on the other hand, have five year terms and are a more accurate indicator of potential activity.

The "Top 10" list of countries, where about 90% of the world's hams reside, makes interesting reading. I am quoting from IARU statistics of 1994. First spot is occupied by Japan with 1,300,000; next is the United States of America with 632,000; then Germany with 64,000; United Kingdom with 62,000; Indonesia with 60,000; Spain with 47,000; Canada with 44,000; Russia with 38,000; Italy with 30,000 and tenth is Brazil with 27,000.

Japan has half the world's amateur radio population with 1.3 million. The Japan Amateur Radio League (JARL) has a membership of 194,000. The United States of America has 25% of the world's radio amateurs. About 30 years ago the world amateur population was barely more than 400,000 and the US had, at that time, more than half of the world's total. Amateur radio has grown in the US but has been growing faster in a number of other countries, not just Japan. Out of the 632,000 amateurs in the USA, the ARRL membership is about 172,000, or 27%.

Germany (after the reunification) has the largest number of amateurs of any European country. The Deutscher Amateur Radio Club (DARC) has a remarkable 77% of the licensed amateurs in Germany as members. Not far behind is the United Kingdom. The Radio Society of Great Britain (RSGB) has 44% of licence holders as members with a total membership of about 30,000.

Amateur radio barely existed in Indonesia as little as 25 years ago. Today the Indonesian amateurs number about

60,000 and membership is compulsory in the Organisasi Amatir Radio Indonesia (ORARI). Spain is another European country where amateur radio has experienced rapid growth in recent years. The number of amateurs is growing rapidly in Canada thanks to recent changes in the licensing structure.

Accurate statistics for Russia are difficult to come by at present, but the estimate of amateur numbers is about 38,000. The new national organisation Soyuz Radiolyubitelej Rossii (SRR) was accepted into the membership of IARU in 1994. Italy has about 30,000 amateurs and Brazil leads the South American countries with 27,000 amateurs. Not far away are Argentina, France, and Venezuela; and somewhere in that queue is also Australia with (according to the International Callbook) 22965 licences, which number, I am sure, includes all the beacon and repeater licences as well.

There are 417,000 amateurs in IARU Region 1 (Europe, Africa, Middle East and the former Soviet Union); 780,000 amateurs in Region 2 (North and South America); and 1.4 million in Region 3 (the rest of Asia and Oceania). A country that should soon join the top ten is Thailand, where 92,000 operator's licences have been issued and 38, 000 amateurs have requested a station licence.

Huang Yan Dao — BS7H

Just after the deadline closed on last month's issue of *Amateur Radio*, the Chinese Radio Sports Association (CRSA) and the South China Sea DX team (SCSDX) announced a second DXpedition to Huang Yan Dao, also known as Scarborough Reef. The reef lies at Latitude 15° 07' N and Longitude 117° 51' E, according to some sources. The Australian Macquarie World Atlas describes it as Scarborough Shoal, and shows it as a circular shoal comprising seven small rock islets at 15° 08' N and 117° 46' E, some 250 km west of the Philippines mainland.

Six operators, Chen BZ1HAM, Wang BZ1OK, Olli OH0XX, Martti OH2BH, Petri OH2KNB and Tim KJ6VH set out at about 0200 UTC on 11 April from Subic Bay, the former US airbase on the Philippines. The trip was estimated to take 24-30 hours and there was hope they would arrive at the reef between 0000 and 0400 UTC on 12 April. Captain Tony Hookway, master of the 70 foot MV Taoibuga, together with his five man crew, saw that the operating team was safely transported to and from Scarborough.

The weather was mild, about 80° F, there was no storm activity in the region and it was morning, local time. The team found the desirable operating sites and put the stations together in the shortest possible time. The first contacts into VK were made around 1126 UTC on the 20 metre phone band on 12 April. The signals were very strong on 40 metres CW on the same day, around 2030 UTC. Most of the activity was on 15, 20 and 40 metres and a total of approx 12,000 QSOs was made in 80 hours of operating.

This activity was very different from the first one in June 1994. It was not mounted on platforms attached to metal pipe scaffolding on the reef. This time it was mounted on actual rock surfaces. The expedition used two Yaesu FT-990s, Cushcraft vertical antennas and two new Alpha 91 B amplifiers for severe environment testing purposes. Unfortunately, the amplifiers failed but the experience will enable the manufacturers to redesign their product. It was frustrating to have available 5 kW of generator power only to be limited to 100 watts basic power. The expedition closed its activity around 0200 UTC on 16 April.

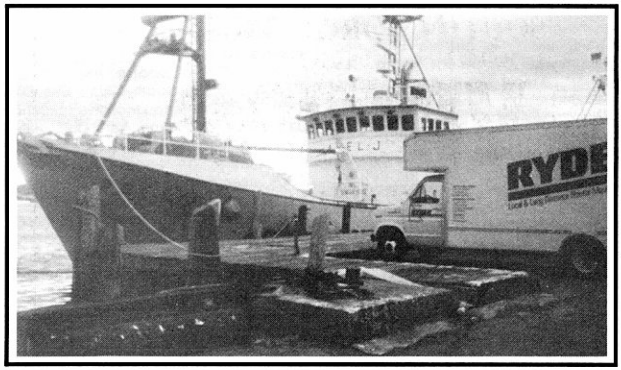
An application for separate DXCC status for Scarborough Reef is pending before the ARRL DX Advisory Committee. The present expedition was conducted with the firm belief that Huang Yan Dao — Scarborough Reef — fully meets existing DXCC rules. For this reason, all

those who worked the station last year in June, were urged to have a new contact with the second DXpedition.

The pile-up was huge but propagation was favourable in VK and ZL and quite a few of the local DXers worked the station.

BZ1HAM, JA1BK, and KJ4VH were to attend the Visalia DX Convention and the Dayton Hamvention at the end of April, and present their story to those attending. The presentation of the necessary documentation to the ARRL in Newington, was to follow shortly afterwards.

The QSL manager for this activity is the well known Japanese DXer, Kan JA1BK. Send your QSL card to the following home address (not the Callbook address!) Kan Mizoguchi, 5-3 Sakuragaoka 4 Chome, Tama City, Tokyo, 206 Japan. Do not sent "green stamps" but send at least one IRC.



Loading the VP8SGP equipment on board the Abel-J.

International Marconi Day VK2IMD

The Wahroonga Amateur Historical Radio Association (WAHRA) reports that Australian activity on Saturday, 22 April was an outstanding success. 19 amateurs were active for 137 hours in a 24 hour period. Impossible? Not at all, if you consider that at times there were up to four stations active on different bands.

Activity was on the 15, 20, 30, 40 and 80 metre HF bands, on two metre and 70 cm FM, and on two metre and 40 metre packet band segments. The 10, 12, 17 and 160 metre bands were not used. The total number of contacts was just under 800, and 261 prefixes were worked in 49 countries on all continents except Africa and Antarctica. Approximately 450 of the contacts were on CW on the 15, 20, 30 and 40 metre bands.

Changes in the US Callsign System

According to Bob KI4RU, some of the familiar US callsign are going to change soon. The FCC was reported to have announced changes to the US prefixes as follows. In future Hawaii will use KH6, NH6, AH6, KH7, AH7, and NH7 prefixes. Amateurs active from Kure Island will use the KH7, NH7, AH7 prefixes, their standard suffix and an additional /K suffix.

Alaska presently uses the KL7, NL7 and AL7 prefixes. In the future the Alaskan prefixes will be KL0-9, NL0-9, and AL0-9, except for the special block of KL9KAA to KL9KHZ which will indicate US Military Personnel in South Korea.

Puerto Rico at present uses KP4 and NP4 prefixes. In future, additional prefixes KP3 and NP3 will also be used. This ruling does not include the island of Desecheo.

New Minimum Island Size Rule — DXCC

The ARRL Awards Committee voted five to two to accept a modified ARRL DX Advisory Committee (DXAC) recommendation to add a minimum size rule to point two (separation by water) of the countries list criteria in the DXCC rules. This change adds the following paragraphs to the existing rules under point 2:

"(c) An island is defined as a naturally formed area of land surrounded by water, the surface of which is above water at high tide. Rocks which cannot sustain habitation shall not be considered for DXCC country status.

(d) An island must meet or exceed size standards. To be eligible for consideration, the island must be visible and named on a chart with a scale of not less than 1:1,000,000. Charts used must be from recognised national mapping agencies. The island must consist of a single unbroken piece of land not less than 10,000 square feet in area, which is above water at high tide. The area requirements shall be demonstrated by the chart."

Future DX Activity

- The Belcher Island Group (NA-196), a group of low lying islands located in Hudson Bay (56° 30' N, 80° 00' W), will be activated for the IOTA program by VE3WFS at the end of June.
- Mike W0YR is on a three year assignment in Moscow until about August 1997. He will be active as R3/W0YR primarily on CW and RTTY. QSL to AA9DX, PO Box 923, Wooddale, IL 60191-0923, USA.
- Paul 5Z4FO (also known as W4PFM, OA8V and KP4AWH) will be moving to Uganda for a one year work assignment starting in July. He will sign as 5X1MV on all bands on CW and SSB. QSL via KB4EKY.
- The proposed DU0K activity from North Danger Reef, one of the Spratly Islands claimed by the Philippines, has been cancelled according to TI4CF and WH0AAV. No reason was given.
- Al P29EP, formerly H44AP, is now in New Guinea. QSL to Al Pearce, 1828 Boroko, NCD, Papua and New Guinea.
- Sanyi XU95HA was heard on 3507 kHz calling CQ DX on 20 April without any takers.
- Eric OH2BBF will be in Ngara, Tanzania until mid June with UNHCR. He hopes to be active from 5X, 9Q, 9U, 9X and from 5H.
- It has been reported that Oleg YA/UT9XL is active from the Ukrainian Embassy in Kabul for the next two to three months. QSL via PO Box 207, Pavlograd, 323012, Ukraine.
- Jim TJ1JB (ex-5X1B) is active on 20 metre CW around 1900-2300 UTC. He is presently working for the American Embassy in Cameroon. QSL via KE9A.
- ZS50PAX is active on 3700, 7076 and 14170 kHz until 8 October, celebrating the end of hostilities fifty years ago.
- 9L1PG. Paul will be in Sierra Leone until August 1996. His new QSL manager is Cecil NW8F.
- Follow the raft. The raft "Illa Tiki" sailed from Ecuador on 30 March en route to Hawaii with an American, Ecuadorian and Austrian crew. The trip is estimated to take five to six months. They are using an FT900 and Hustler antenna and have a schedule to work schools on Tuesday and Thursdays at 1900 UTC with the callsign KC5KHA/mm; otherwise they might be heard on 40, 30, 20, 17 and 15 metres.

The QSL manager is AA5NT who can also supply additional information.

- Carl will be working from Bonaire, Netherland Antilles for a few months operating as PJ0/KB5DZP.

Interesting QSOs and QSL Information

E = East coast; W = West coast; M = the rest of Australia

- XX2MD — Dias — 14220 — SSB — 1205 — Mar (E). QSL to Antonio M Dias, PO Box 1339, Macau, SE Asia.
- J37LF — Thor — 14188 — SSB — 0601 — April (E). QSL to PO Box 117, St George's, Grenada, West Indies, Caribbean.
- EL2RR — Sekou — 14226 — SSB — 2215 — April (E). QSL to Sekou Kamara, PO Box 165, Monrovia, Liberia (Note — mail service is not secure).
- TA2DS — Selim — 14222 — SSB — 0620 — April (E). QSL via WA3HUP Mary A Crider, 2485 Lewisbery Rd, York Haven, PA 17370 USA.
- 9N1ARB — Dick — 14217 — SSB — 0905 — April (E). QSL to VK6UE.
- 5N8NDP — Paolo — 14186 — SSB — 0627 — April (E). QSL to IK5JAN, Marcello Ceccherini, via Toricella 165, 1-50017 Campi Bisenzio, Italy.
- BV9AYA — 14003 — CW — 1056 — April (E). QSL to BV2KI, Bruce Yih, Box 84-609, Taipei, Taiwan.
- 9N1RHM — Rich — 21205 — SSB — 0522 — April (E). QSL to PO Box 5147, Kathmandu, Nepal, Asia.
- D68QM — Marcel — 14179 — SSB — 0512 — April (E). QSL to ON4QM, Marcel Dehonin, Everestr 130, B-1932, Sint Stevens Woluwe, BT, Belgium.
- KG4ZE — 7009 — CW — 1135 — April (E). QSL to K4SXT, Julius Gostel JR, 2217 Hunters Wood Way, Virginia Beach, VA-23454, USA.
- N2PQE/KH0 — 7009 — CW — 1155 — April (E). QSL to JE2HCL, Yoshihiro Sugimoto, 1-18-15 Iguchi, Mitaka City, Tokyo, 181, Japan.
- 1P0U — 14005 — CW — 0711 — April (E). QSL to DL7UHR, Hans-Rainer Uebel, Am Goldmann Park 47, D-12587, Berlin, Germany.

From Here There and Everywhere

- Received a QSL card from Monica EL2PP with a small note from her QSL manager, Toni N2CYL. Writes Toni, *"It is next to impossible to get mail in or out of Liberia. Monica has been in Liberia since 1990 with her family, her husband being employed by the Italian Consulate. Monica speaks four languages. She is using a TS850S, a TH7DX beam and dipoles. Monica is not active on CW".*
- TM0RAD will be active on 3-4 June. QSL to F6KNN, which is a radio club station.
- Oleg UA4CIF and Valery RA6YR produced an up to date list of the present QSL Bureau addresses of the former USSR republics. Says Oleg, *"I hope this list will be useful for better QSLing with ex-USSR territories".*
  EK — Box 22, Yerevan 375000, Armenia
  ER — Box 6637, Kishinev-50, 277050 Moldavia
  EU — Box 469, c/o EU1AO, Minsk-50, 220050 Byelorussia
  EX — Box 1100 ARUK Bishkek, 720020 Kirghyzstan
  EY — Box 303 (TARL) Glavpochtamt, Dushanbe 734025 Tadjikistan
  EZ — Box 555 (TARL) Ashgabat 744020, Turkmenistan
  UK — Box 0, Tashkent, 700000, Uzbekistan.
  UN — Box 112, c/- UN9PC, Karaganda, 470055, Kazakhstan
  UR — Box 56, UARL Kiev-1 252001 Ukraine.
  4K — Box 165 ROSTK DVPSTO, 4K7DWA, Baku 370000 Azerbaidjan
  4L — Box 1, Tbilisi 380002 Georgia
  UA — Box 59 URR c/o RZ3AZO Moscow 105122 Russia, or Box 88, CRCRF Moscow, Russia.
- Many of us remember Mark VR6ME who was quite active on Pitcairn Island in 1993-94. Mark is now in Geraldton, Western Australia and uses the callsign VK6BLW.
- Ron ZL1AMO was active from Fiji in the last days of April as 3D2RW. He left Fiji on 29 April for Nauru.
- If you worked J28GR with his special call J20SF from Isle des sept Freres (seven Brothers Island), send your QSL to F5LBM, 38 Chemin Du Plateau, 67 500 Haguenau, France.
- 9H50VE was active from Malta from 6 to 8 May celebrating the 50th anniversary of the ending of World War II. QSL to PO Box 114, Valletta, CMROI, Malta,
- The Norwegian Station LN1V was active at the beginning of May celebrating the end of the war in Norway. QSL to LA4LN.
- Peter ON6TT has made about 12000 contacts as 4U0ITU, 9Q5TT, and 4U9Q. Most of it on SSB, a few RTTY contacts and a few thousand on CW. Due to time and other restrictions he was not able to work from 9X and 9U. Alex 9X5EE will take up Peter's duties in Goma, which is near a Rwandan refugee camp in Zaire.
- Monique ON6BY, QSL manager for some Kuwaiti stations, reports that the callsign situation in Kuwait has been "reversed" (see *Amateur Radio*, May issue) because of the confusion created by the previous decision. Lots of non Kuwaiti amateurs had discussions with the Ministry of Communications with the result that all the non Kuwaitis got their old call back for a period of one year. To be safe, ask the QSL route on each occasion if you want a 9K2 card.
- There were a number of pirates on the air lately. ET3/I2MQP T5/I2MQP, TI9US, 1A0/I2MQP, 1A0/IK2MQ, ZL8RN, 3W1AS, P5BK, KH7DU, AA2JS/TI9, 5A1D, 5A0CW, TN9DX, 5A0/WA2MT, ZL8RS/VK0, F5PFP/ZC6 are all suspected to be pirates, therefore the advice is, save your money, do not QSL.
- Are you still interested in the, so far, officially "non-existent" Principality of Seborga? On 23 March the Principality re-issued its old coin, and the dealers

paid $US6.00 for one "Luigino", the old coin which dates back to 1666. Paul, I1RBJ moved into the "officially recognised" extraterritorial "Il Palazzo". Paul had not applied yet for official DXCC recognition because he was waiting on the outcome of a vote on the new constitution on 23 April which would include a vote on the map of the territory of the Principality.

- The address of N4GAK, QSL manager for V73C is Bruce Smith, 15 Henderson Drive Fayetteville, TN-37334, USA.
- Patrick HH2PK advises to use registered mail for direct QSLs because, as he put it, there is QRM in the local Post Office.
- FM5CD will use the special call T02DX in major contests during 1995.
- YW0RCV, Aves Island, cards have not yet been printed says YV5EED as relayed by YV5DTA.
- End of April saw two noted international conventions holding "their annual get-together". Visalia DX Convention on 21 to 23 April, and the Dayton Hamvention on 28 to 30 April.
- Members of the Royal Omani Amateur Radio Society conducted a DXpedition to Al Ghanan Island from 20 to 27 April with the callsign A43GI. QSL via A47RS, PO Box 981, Muscat, 113, Sultanate of Oman.
- The NSW Division of the WIA (VK2) activated the special commemorative callsign, AX2ITU on 17 May 1995, commemorating the establishment of the International Telegraph Convention in Paris in 1865. The organisation was renamed after the war, in 1947, as The International Telecommunication Union and became a specialised agency of the United Nations with headquarters in Geneva, Switzerland. Among the many functions carried out by the ITU, it regulates the electromagnetic spectrum, including amateur radio frequency band allocations. 17 May is designated in each country as World Communication Day and this year the ITU is 130 years old. Contacts with AX2ITU can be QSLed via the Bureau or directly with VK2PS (QTHR) with the necessary reply envelope and return postage.
- According to Jim Smith VK9NS, as quoted by the DXNS, Marni VU2JPS is a real operator on Andaman Islands. He works for All India Radio in Port Blair, Andaman Islands and he will be there for the next three to four years. Apparently he is on 7050 kHz SSB regularly but he can be also found on 14002 kHz CW. He hopes to receive a VU7 callsign shortly. Has any VK/ZL worked him yet?
- The American *"CQ Amateur Radio"* magazine celebrated the 50th anniversary of its existence in January 1995 with a 234 page special collectors' edition issue, which has a nostalgic look at the progress of amateur radio and amateur radio publications in the USA during the past fifty years. It is interesting to read that the President of the United States, Mr Bill Clinton, the Vice President, Mr Al Gore, the Chairman of the Federal Communication Commission, Mr Reed E Hundt and David Sumner, Executive Vice President of the ARRL, have all written congratulatory letters to the magazine, praising not only the magazine but the role and importance of amateur radio on the American and on the international scene.

Mr Hundt, Chairman of the FCC (similar body to our SMA) wrote, among other things, *"Many scientists, engineers, astronauts and technicians took their first steps toward their careers when they became amateur radio operators . . . The amateur service not only provides an enjoyable activity for technically inclined persons but also plays a vital role during times of disaster . . . During the 1980s amateurs were among the first to apply the vast potential of personal computers . . . Amateur operators are always on the very cutting edge of communication technology."*

The President, Mr Bill Clinton, wrote, *"Since its inception amateur radio has been far more than a hobby for its users. It is a way to communicate with people across international boundaries and cultures, to express ideas and share opinions, and to make new friends."*

Vice President, Mr Al Gore, wrote, *"As technical innovators and scientific leaders, ham radio operators are already working hard to build the National Information Infrastructure, a seamless web of communication networks that will forever change the way we live, learn, work and communicate with each other."*

I found the above lines to be a very nice appreciation and acknowledgment of the value and importance of amateur radio in the US. Yes, in the USA they do things differently.

QSLs Received

ST2AA (7 w WB2RAJ) — HV4NAC (1 m IK0FVC) — TN4U (1 m DL7VRO) — HV3SJ (5 w I0DUD) — T32A (3 w JA5EXW) — T77C (1 m op) — 5U7AA (1 m HH2HM) — VS6WV (7 m K0TLM) — EL2PP (3 m N2CYL).

Thankyou

Many thanks to my helpers without whose support this column could not exist. Special thanks to VK2KAA, VK2KCP, VK2KFU, VK4AAR, VK6HD, A47RS, EX0A, KI4RU, N2CYL, RA6YR, UA4CIF, and the publications *QRZ DX, The DX Bulletin, The DX News Sheet, QST, CQ Amateur Radio, INDEXA* and *GOLIST QSL Managers List.*

73 and good DX

PO Box 93, Dural NSW 2158

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Over to You — Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

Overseas Membership

With regard to Roth Jones' letter in February *Amateur Radio,* it is a good idea to belong to one of the international societies to get a better feel for the international scene. Belonging to the WIA alone can lead to parochialism. I am a long time member of the Radio Society of Great Britain (RSGB) and recommend it as a second society and an alternative to the American Radio Relay League (ARRL).

Consider the following. The RSGB annual subscription for 94/95 was $AUS66.00, including postage of their journal *Radio Communications,* which often arrives at Lakes Entrance before *Amateur Radio. Radio Communications* '94 included more than 50 items especially for beginners and novices.

The special rates to members for technical and general interest books could save the cost of a subscription. For example, the 1995 ARRL Handbook at $AUS38.65 posted as against the WIA price of $66.00.

Both the RSGB and the ARRL are very influential representatives of the amateur radio movement at ITU, WARC and IARU conferences. Both are very progressive societies with management very conscious of the need for product improvement to retain and attract customers.

Lindsay Lawless VK3ANJ
Box 760
Lakes Entrance VIC 3909

Compulsory CW

I wish to thank VK2GRY for his carefully considered article on compulsory CW in the May issue of *Amateur Radio*. He addressed the fundamental issue of whether compulsory CW is in the best interests of amateur radio, and did this very well.

Bob made references to past comments of mine, which seems to bring me back into the battle. In looking back over this earlier correspondence the point that, more than any other, raises my ire, relates to a letter from an amateur incapacitated by a stroke who was unable to advance his CW beyond 5 wpm, and was thus denied a full call. My sympathy went out to him and I was appalled at a regulatory process that could not, or would not, make allowances for such situations.

One response in *Amateur Radio* was *"It would be unfortunate . . . if a licence was issued on the production of a medical certificate no matter what our personal compassionate thoughts might be"* and finished with the unfeeling comment *"Stick with it, Ian, you have only 5 wpm to go."*

I request the executive of the WIA approach the Minister, seeking whatever legislative, or regulatory, changes are necessary to enable the Minister to waive the requirement for CW for a full call, where the applicant can demonstrate he/she is not able to fulfil the CW requirement because of a physical disability.

Before any of you fire off your broadsides, let me make three points:

1. Reflect on the various pieces of anti-discrimination legislation that have come into effect in recent years.
2. As far as international agreements are concerned, it seems other countries make unilateral changes when it suits them, so why not Australia?
3. Forget those wise-cracks about criticism coming from people who haven't the fortitude to achieve a full call — I passed 10 wpm in order to deny the use of that spurious argument.

Graham B Jackson VK3GBJ
PO Box 39
Beaconsfield Upper VIC 3808

Portability of Call Signs

I understand the SMA is proposing that the current system of call sign allocation be altered so there will be no need to change call signs on moving interstate (ie if I were to move to Perth I could retain VK3DD!) I wonder if the membership of the WIA (indeed the amateur population in general) is to be given the opportunity to comment on this matter, if indeed the proposal is genuine?

The current system of numeric indicators for each state would seem to me to be appropriate and not in need of alteration. This system identifies the state of residence during contacts and has distance advantages in contesting (RD, Novice, etc, the "Training Grounds" of our pastime).

I, for one, would not like to see the present system changed and I wonder what others (including the WIA) think of such a proposal.

Derek Thurgood VK3DD
PO Box 234
Yarra Glen 3775

(There is a problem looming with VK2 and VK3 in that, while the initial suffix letters continue to designate the class of licence, the number of callsigns available to new licensees is steadily diminishing. A new additional prefix could be one solution. Ed)

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An Old Timer Reflects....

Des Greenham VK3CO (SK) finishes his series of looking back over 50 years of amateur radio operation.

In pre-war (WW2) days it was customary to build crystal locked transmitters because, at that time, the use of variable frequency oscillators was not an option. The reason being that components were not good enough to guarantee satisfactory frequency stability. It was a strict requirement that you must have a crystal locked rig or equivalent. So, we all used crystals. To buy a commercial crystal was very expensive hence, with the usual ingenuity, we made other arrangements.

It was found that old spectacles were made from genuine quartz crystal and these were available from second hand shops and pawn brokers at a very low price. But, it could not be certain that they were quartz. So, after purchase, it was necessary to check if the spectacles were quartz or just plain glass. A simple test was to place the lenses on the grid cap of a regenerative receiver and tune the dial. If the lens was quartz, you could hear "joeys" or "beeps" across the band indicating that the lens was, in fact, a piece of quartz.

After having proved it to be quartz, came the job of grinding it flat. It was absolutely necessary to have a micrometer to check on the parallel flatness. A piece of heavy plate glass was obtained and some grinding powder. This was carborundum of varying grades. The action was in a figure of eight motion with a coarse powder and water. One's fingers also received some grinding resulting in very sore fingers. However, this was the price we paid.

After getting the lens down to a parallel slab it was then necessary to check its natural frequency. When it was truly parallel it was placed in a crystal holder between two light metal plates and placed into a valve oscillator circuit. If you were lucky it would oscillate at some frequency, usually around 2 — 3 MHz. Then, with very fine powder, you rubbed away again making sure you kept the slab parallel by doing regular micrometer checks. Using great care, you could get the crystal down to 3.5 MHz, in the 80 metre band. With patience you could then get it where you wanted it in that band.

But if, by bad luck, you suddenly found it to be 3.9 MHz, outside the amateur band, then what to do? Oh well, what's wrong with a 40 metre crystal? So, more grinding and down to 7 MHz.

Then, around 1950, the first stable commercial variable frequency oscillator became available. It was the Geloso VFO using a 6J5 oscillator and 6V6 buffer. This was a kit and was very popular. At this time, of course, many crystals, ex army, etc, became available and the need to look around Pawn Shops for old spectacles was gone. **ar**

Pounding Brass

*Stephen P Smith VK2SPS**

This month there are two important events happening in the way of contests. The first is the "VK Novice Contest", which takes place over the weekend of 17 and 18 June, and the other, also on the same weekend, is the "CW Operators QRP Contest" (the band will be active!). It doesn't matter if you are "QRP" or a "QRO" operator, let's all pull the keys out and put in a good showing to support these two fine contests.

Recently I received a request from Pat VK2DMY, seeking information on the Curtis K5 ("Lil Bugger"). Unfortunately, I was not able to comply with Pat's request. I would appreciate any information in relation to the Curtis K5 (to be used on a straight key), particularly regarding the connections for the four wires (red, black, grey and brown) coming from the unit.

Passive CW Filter

I hope the last two columns about the CW Filters have kindled your interest in homebrew construction. If you decided to purchase the parts from Ed, I am sure you will not be disappointed as his kits rate extremely highly in performance and price, especially when you compare them with some of the commercial units. Further information can be obtained from Ed Wetherhold, 1426 Catlyn Place, Annapolis, MD, 21401, USA.

We will now conclude the series with a procedure for calculating the number of turns to remove from a bifilar-wound 88 mH inductor to obtain a desired inductance.

1. A bifilar-wound inductor is identified by its red and green coloured insulated wires. The polyurethane film insulated wires are solderable at 750 to 800 degrees F, and the leads do not have to be scraped to remove the insulation. CAUTION! The fumes generated during soldering are toxic to the lungs and eyes, so keep your face away from the fumes and solder only in a well ventilated area.
2. Measure the original inductance, Lo, with the two windings connected in series aiding. To do this, connect the red start lead to the green finish lead, and connect the other two leads to an inductance bridge. An alternate method of finding the inductance is to resonate the inductor with a known capacitance and calculate the inductance based on the capacitance and the resonant frequency measured to the nearest hertz with a digital frequency counter. For example, connect the inductor in parallel with a 0.27 μF capacitor (with an accuracy of better than 0.5%) and lightly couple an audio signal generator to the inductor

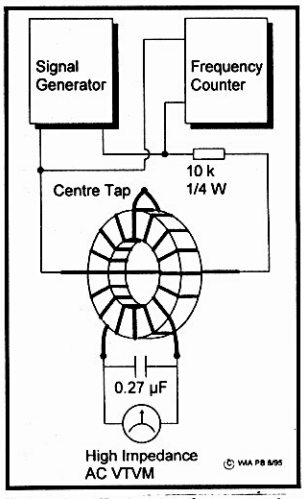

Figure 1 — Test setup for measuring the inductance of a toroidal inductor.

and capacitor using the circuit shown in Fig 1. Vary the generator frequency until an AC voltmeter peak is obtained. Record the frequency indicated on the frequency meter (it should be around 1033 Hz) and calculate the inductance using the equation Lo = 25.33/f²C where Lo, f and C are in mH, kHz and μF. For example, if f = 1.033 kHz and

C = 0.27 μf, Lo = 25.33/(1.33*.27)mH = 97.92 mH.

After determining Lo, continue with steps 3 to 6 below.

3. Remove 50 turn-pairs (total turns removed = 100) and again connect the windings in series-aiding. Measure the modified inductance Lm.
4. Calculate using To = 100 * R/(R-1), where R = √(Lo/Lm), To = the original number of turns on the inductor core, Lo = the original inductance in the series-aiding connection, and Lm = the modified inductance after removing 100 turns. For example, if Lo = 89.10 mH and Lm = 67.09 mH, then R = 1.152417796 and To = 756 turns.
5. Calculate using S = (To — 100)/√Lm, where Lm is the modified inductance after removing 100 turns from the inductor. For example, if Lo = 89.10 mH, To = 756 and Lm = 67.09 mH for 100 turns removed, then S = (756 — 100)/√67.09 = 80.0894.
6. Use the following general equation (applicable to all bifilar-wound inductors where Lo = 89.10 mH) to find the number of turns to remove to obtain a specific inductance. Td = To — (S * √Ld), where Td is the number of turns to remove from an unmodified 89.10 mH inductor, To is the number of original turns on the inductor core, Ld is the desired inductance in mH, and S is the value calculated in 5. above.

For example, for the values given in 5. above, and if the desired inductance (Ld) is 43.48 mH, then Td = 756 — (80.0894 * √43.48) = 756 — 528 = 228 turns, or 114 turn-pairs to be removed from the original inductor. Because 100 turns have already been removed, an additional 128 turns (or 64 turn-pairs) must be removed to achieve 43.48 mH.

Determining the Source Impedance of Your Receiver Audio Output

The manuals of most commercial receivers specify the load that is to be connected to the audio output jack, and four or eight ohms are common values. However, this load specification is not applicable for defining the actual source impedance of your receiver's audio output. It is therefore advisable to confirm by measurement that the CW filter input will be properly terminated by the impedance at the 8/200 ohm transformer high impedance winding before starting the filter assembly.

To do this, obtain an AC voltmeter, several half watt resistors between 1000 and 1500 ohms, and one of the 8/200 ohm transformers. Use these items in the following procedure:

1. Connect the eight ohm winding of the 8/200 ohm transformer to the plug cable provided in the parts kit. Use your ohm meter to determine which of the two transformer windings is the eight ohm winding. This winding will have a DC resistance of about one ohm, while the 200 ohm winding will have a DC resistance of about 12 ohms.
2. Turn on your receiver. Apply a tone modulated RF signal to the antenna terminals and tune the receiver to pick up the modulated signal. Or, if your receiver has an audio input jack, apply a 400 Hz tone to it.
3. Plug the eight ohm transformer into your receiver phone jack.
4. Connect the AC voltmeter to the high impedance winding (with no load at this time) and adjust the receiver audio gain to get a steady voltage indication of about one volt on the AC scale, or a level well above the noise level. The voltage level should be reasonably constant for valid test results. Vary the receiver audio gain control up and down to check that the meter responds in a corresponding manner to confirm that the audio output stage is not overloaded. Overload is indicated by the audio level not increasing upwards as the gain is increased. Then set the gain control, record the AC voltage and call it V1.
5. Without changing any control settings, connect one of the resistors you previously selected across the 200 ohm winding and note that the voltage level drops. Record the new level and call it V2. From this data you can calculate the impedance that the filter will see when it looks into the 200 ohm winding of the transformer.
6. Calculate the impedance from the equation Z = R(V1-V2)/V2, where R is the selected resistance in ohms and V1 and V2 are in AC volts. For example, if R = 1100 ohms, V1 = 1.0 volt and V2 0.83 volt, then Z = 1100(1.0 — 0.83)/0.83 = 1100(0.17)/0.83 = 225 ohms. Since this is within ten percent of the filter design impedance (Rt) of 220 to 230 ohms, your filter is satisfactory terminated at its input. If the measured impedance is substantially lower than 200 ohms, repeat the measurement procedure except, this time, connect the centre tap of the eight ohm winding to the receiver audio output jack.
7. Because the impedance specification of your speaker or headset is a reliable indication of the load impedance, it is sufficient to read the impedance from the speaker or headset label and use the 8/200 ohm transformer to match them to the filter output. If you are using a high impedance headset, the output transformer may be omitted and the output lead of C5 may be connected directly to the headset. However, a resistor should be connected from the output lead of C5 to ground so the parallel resistance of the headset and resistor is about 225 ohms.

Once again I would like to thank Ed Wetherhold for giving me permission to reproduce this article for *Pounding Brass.*

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Technical Correspondence

All technical correspondence from members will be considered for publication, but should be less than 300 words.

A 240 Volt AC Line Monitor

I was pleased to see the warning box at the start of the above article on page 10 of the March issue of *Amateur Radio.*

It surprised me to see the note about the existence of mains potential, even when the unit is switched off, and then observe the circuit diagram with only a single-pole mains switch.

Can I make a suggestion in the interests of safety?

Could *Amateur Radio* make it policy that, where a mains switch is included in a published circuit, it be specified and drawn as double-pole, despite what the author used in his or her own version (I'm sure authors will not overly complain about this).

Warnings should still include *"All parts of the circuit must be assumed to be operating at mains potential, even when the unit is switched off"*, but probably no longer need *"this can happen if the active and neutral leads are reversed, an all too frequent occurrence".*

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Repeater Link

*Will McGhie VK6UU**

Crystal Harmonic RF Signal Generator

This month's column concludes the signal generator article commenced last month. Refer to last month's *Repeater Link* for the circuit diagram.

Level

A signal generator for testing two metre FM receivers is of limited use if there is no means of level control. This is where I had a big win. My previous design used a 100 ohm carbon potentiometer in the RF output to the receiver under test. It was not good, as the potentiometer had limited range and changed the source impedance to the receiver. I found the easiest way to vary the signal level was to vary the supply voltage to the crystal oscillator and the buffer amp.

At first thought this idea seems fraught with problems, not least of which was the probability of the frequency shifting. Varying the oscillator and buffer from 12 volts down to two volts, where the two metre harmonic disappeared into the noise, did result in several kHz of frequency shift, usually down. This was not acceptable. However, I found that by restricting the supply voltage shift from five volts to two volts, the frequency shift was less than one kHz down. The trade off was lower signal level on two metres from 1000 microvolts to about 100 microvolts. However, in practice, 100 microvolts maximum signal level is a good signal level for two metre receiver testing.

One problem with signal generators can be difficulty in isolating the signal source from the receiver through the attenuation method used. At weak signal levels, moving the connecting coax between the signal generator and the receiver can see the signal level change. This design, by reducing the actual signal source level, overcomes this.

While on the subject of level, crystal oscillators used as harmonic generators don't produce the same harmonic level from crystal to crystal. A given crystal producing a particular level on two metres, when replaced with another crystal on a different frequency (or even the same frequency) usually results in a different level.

I tried several different crystals and found signal variations of up to 10 dB. This means that it is not possible to calibrate the signal source against a known signal generator and expect it to be true for all crystals. If you only use the signal generator with one crystal then this is not a problem. Different crystals could be calibrated against a signal generator and the RF level control labelled to suite. This level variation from crystal to crystal is probably due to the different degrees of activity between crystals. Some crystals drive the oscillator circuit harder and hence produce higher levels of harmonics. Placing a clipper circuit after the crystal oscillator may overcome this. A modification for another time.

FM Modulation

Now that I had a two metre signal source, the next task was to frequency modulate it. Placing a varicap diode in series with the crystal was the easiest way. You will notice that there are two varicap diodes in series. The reason for this was due to the capacitance of the varicap biased at about half the five volt regulated supply producing 30 pF. This left little room to add a trimmer capacitor for frequency adjustment.

Placing two varicaps in series lowered the series capacitance and allowed for the inclusion of a 10 pF variable capacitor for frequency netting. Placing two varicaps in series without a bias resistor to the lower diode seems to work, with the lower varicap receiving its DC bias through the leakage in the top diode. That's my guess. Note also that the bias for the varicaps does not come from the RF level control.

As the DC voltage to the oscillator and buffer is varied, the DC bias voltage remains constant so as not to frequency shift the crystal. A more advanced design could vary the voltage to the crystal oscillator and buffer over a greater range, to achieve a larger signal level difference between high and low. The bias to the varicaps varied to compensate for the greater frequency shift.

Varicap Diode

The BB809 varicap diode was used because it is cheap (about 80 cents) and I could actually buy it locally from World Wide Electronics in Western Australia. You may not easily find this diode, but any BB series diode with a capacitance ratio (Cd) of around five would be suitable. The old BA 102, now replaced with the BB119, only has a Cd ratio of 1.3. This means less deviation for a given audio input. With a low Cd ratio diode you may find only a couple of kHz deviation at best. Dick Smith Electronics sells the BB212 with a high Cd ratio of 22. This should produce lots of deviation but is a little pricey.

Tone Source

Now that the signal generator can be frequency modulated, a one kHz tone source is required. It had to be simple, have low power consumption and a distortion level under five percent. My final choice was the simple one transistor phase shift oscillator. The phase shift between the base and collector of a transistor is 180 degrees, the extra 180 degrees required for oscillation produced by using three RC combinations, each providing 60 degrees. The base input resistance is the third resistor, in case you are looking for it.

There is one problem with this simple phase shift oscillator, and that being its high distortion content, typically 20%. The waveform as seen on an oscilloscope is usually flattened on one half of the cycle and or peaked on the other. The solution is to introduce some negative feedback into the oscillator, in the form of an unbypassed emitter resistor. The value is somewhat critical, in that too much negative feedback and the oscillator won't oscillate, and too little and the oscillator has a high distortion level. With a five volt regulated supply, 33 ohms is about right. A 100 ohm trim pot can be placed in the emitter lead and adjusted for lowest distortion, while still maintaining oscillation.

Deviation

Due to different crystal activity, different crystals produce different levels of deviation, for the same audio input to the varicap diodes. The amount can be considerable, with some crystals producing over twice the deviation as compared to another crystal. I also noticed that a given crystal producing a given deviation, when plugged into the series capacitance circuit, would more than double its deviation when plugged into the series inductor circuit.

If the level of deviation on a given crystal is too low, even with the audio level control at maximum, then an audio amplifier could be added between the output of the level potentiometer and the varicap diode. The LM386 IC would be my choice.

CTCSS

CTCSS decode is used in some repeaters for various functions and for my signal generator, I included a CTCSS encoder. The encoder used is a commercial unit made by Sigtec, the C1000. This encoder is crystal locked and uses the FX315 chip. If anyone knows a source of these chips please let me know. There are many commercial CTCSS encoders available and this one is switch programmable to any of the 37 CTCSS tones.

I have tried several CTCSS encoder circuits published in various amateur publications and have had mixed success. Most have been free running

and required setting on a given frequency. Also their frequency stability has often been poor, usually due to difficulty in finding the correct frequency determining capacitor. It may seem strange, but it is difficult to build a low frequency oscillator around 100 Hz that has a frequency stability of better than half a cycle.

Construction

I built the harmonic generator and audio oscillator on separate boards, to allow for ease of experimentation. There is no reason why they could not be on the same board. The board material was Tandy vero board. This material is different from the normal vero board, in that the copper pads are all isolated, and have to be joined either by wire or solder bridges. Many projects have been constructed on this material and I have found it very useful and easy to make modifications to. Instead of cutting copper tracks, joining tracks lends itself to easy construction. There are several sizes of this board. I used the 276-148 size and 10 pin SIL connectors for all connections to the board, including the RF output. There should be nothing critical in the layout.

One point about bridging the solder pads. If you use the Tandy vero board, use a low temperature soldering iron. Higher temperatures make it difficult to bridge pads.

To make sure the first crystal harmonic signal generator was not a one off, I constructed a second one. The same construction material was used, but I cleaned up the layout using better RF construction. The result was more harmonic output. I made the connections shorter, with the RF output from the buffer amplifier as close to the output SIL connector as possible. I also made the earthing over as many tracks as possible. This is not critical but did show that the harmonic output could be increased if required.

Conclusion

This is one project I feel well pleased with. A "new" idea on controlling the level output of an RF generator, by changing the supply voltage. It is also a signal generator that could be improved on in several ways. I powered mine with a standard 9 volt "transistor" battery that should run for hours, as the basic circuit draws 10 mA and, with the CTCSS encoder on, 15 mA.

As many repeater sites are only accessible on foot, this signal generator could be a worth while addition to your test equipment. I look forward to any improvements you may come up with.

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VK6UU @ VK6BBS
ar

VHF/UHF — An Expanding World

*Eric Jamieson VK5LP**

All times are UTC.

Vale — Tom VK4ZAL

John VK4KK phoned to sadly report that Tom VK4ZAL had died from a heart attack on 26 April 1995 at the age of 82 years.

Tom was first licensed in 1963 and was an avid supporter of the six metre band. He built much of his own equipment and also used an SCR-522 with a Command transmitter VFO in the AM days of the 1960s. His confirmed score of countries worked on six metres stands at 68, using 50 watts to a Channel 0 television Yagi!

He was one of that ardent group of six metre operators which included Mick VK4ZAA, Dane VK4ZAX, Lance VK4ZAZ, Peter VK4ZPL, John VK4ZJB and Bill VK4WD.

I first worked Tom on 23/11/63 which would have been his first Es season. A notation in my log shows that we discussed at length the subject of "old times," which included our exploits during World War II.

Such was the man that, during recent times, he sent me a cheque for $5, to cover the cost of postage for the occasional copy of my record on his Six Metre Standing List. I did not seek the money and he refused to take back the cheque! Tom regularly sent me news for my column either by letter or telephone.

Tom was also involved with the WIA QSL Bureau, WIA Disposals Officer, the RSL Club and other community organisations. He will be missed from amateur VHF circles and other areas of interest.

Long-distance Tropospheric Propagation

In response to my request in the April issue of *Amateur Radio* for details of tropo openings to ZL and other areas of the Pacific regions, on 144, 432, 1296 and above, I have received a FAX from long time friend Ross VK2DVZ with details of contacts he had to ZL on 144, 432 and 1296 on 17/1/93. In accordance with the details outlined in my request, he told me what I wanted to know and in due course this can go to Emil W3EP, who is preparing a special article regarding tropo openings in the Pacific regions. I urge other operators to likewise send information so that the VK input to any article is worthwhile. Do it now please!

Beacons

Dave Horsfall VK2KFU has kindly sent information received via e-mail from Geoff GJ4ICD, the latest dated 28/4, which includes the most recent update of a world-wide 50 MHz beacon listing with 158 entries running to more than two A4 pages! As far as is known the list does not include private non-24-hours beacons.

Geoff GJ4ICD makes a very generous offer that if anyone requires a beacon and is willing to maintain and look after it, he will supply one free of charge! I assume that also means a VK station, for instance, could undertake to cover the running costs of a beacon placed in a Pacific island country with the consent of their administration and a willing amateur to house it.

When I update my own world listing I will need to dust-off the scanner to save time typing such an extensive list. Including VK there are 44 beacons listed for the Asia/Pacific regions. Anyone requiring a list can have a copy from me on receipt of an SASE.

In the May issue of *Amateur Radio* I listed the various six metre records for each state of Australia. For Queensland, I listed John VK4KK as having worked G4CCZ on 15/2/92 at 16,515 km. Geoff GJ4ICD writes, *I also worked John in 1992 for a distance of 16,730 km; however, in 1989 I worked Tom VK4DDG in QG61 at 16,820 km. I think this may be extended as well, but nobody in the UK has replied to my request.*

The situation is much the same here; until someone enters a claim then alterations are not possible, so the present distance remains.

Northern Hemisphere News

Geoff GJ4ICD writes that the following are new beacons. Some may not be helpful to us at the moment but you may wish to add them to your list. 50.0155 LU9EHF, 50.003 BV2FG, 50.070 SK3SIX, 50.0825 LU8DCH and 50.061 WB0RMO. **Frank PA0BFM** reported good auroral opening on 7/4. Heard/worked OK, S59A, G, GM, GW, OZ, SM, LA, DL, ON, PA, OH and ES.

CO2OJ worked LU on 10/4 via TEP. On 12/4 strong Es opening in Arizona. 15/4 first European Es — I stations worked OKs. 23/4: CO2OJ good Es to W8 and W9 with more than 40 contacts. Also California working Florida via Es. 25/4: First Es in Europe from UK to Italy, also 9H5DM, from 0930 to 1200. 26/5: More Es in Europe with TV copied from SM, LA to GJ4ICD.

The above Es is an early start for the season but it can also mean an early

finish. Last year the northern Es contacts were plentiful and we followed with a good season also. I am sure the same will apply in both areas this year.

Ted Collins G4UPS had a quiet month in March. Apart from his daily sked stations of G3CCH and SM7AED his other contacts were SP6CPH, OY6A, OZ7DX, SM7FJE, G3HBR and 5T5JC. Five G and two OZ beacons heard. Quite a lean month.

The Doughnut Effect

Emil Pocock W3EP reports on the above Effect in the April 1995 issue of *Six News*, the quarterly magazine of the UK Six Metre Group. It came following a request for information in the previous issue as to why it seemed difficult to work via Es at distances between 2400 and 2800 km, particularly as the phenomenon was most evident during the JY7SIX expedition, whereas longer and shorter distances were more common.

Emil writes, *Your appeal to explain why it is more difficult to work 2400-2800 km on sporadic E than shorter or longer distances has a relatively straightforward answer. We have seen that same effect time and again over here. I call it the doughnut effect.*

Sporadic-E paths between 2400 and 2800 km are more difficult to complete than longer and shorter paths. The maximum single-hop distance for Sporadic-E contacts is about 2300 km, a geometric restraint based on an average height of E-layer ionisation of 105 km or so. Curiously enough, sporadic-E paths in the 1800-2200 km range are probably the most common. This is because the single-hop distances near the maximum useable frequency (MUF) are also longest. As the MUF rises above 50 MHz, the path shortens.

It may be possible that some sporadic-E paths at 2400 km or even longer are also completed by unusually long single hops, perhaps from patches of E-layer ionisation that are somewhat higher than the average 105 km. Even so, it is more likely that sporadic-E paths longer than 2400 km are via multiple hops.

If that is indeed the case, then a 2400 km path must involve two hops with an average of 1200 km each (the hops do not have to be of equal length, so long as they total 2400 km). The problem is that 1200 km paths are unusual at 50 MHz, because the required MUF to create such short hops is high, perhaps in the 100 MHz range. Thus to complete a 2400 km path at 50 MHz, two separate sporadic-E centres with MUFs of 100 MHz and spaced 1200 km apart are needed. That is a pretty stiff requirement!

As the path lengthens from 2400 km, the required MUF for the two sporadic-E centres drop, thus making it more likely that the required geometry will be achieved. In theory, this suggests that as the distance approaches 4600 km, there should be a greater incidence of double-hop sporadic-E.

When the probability of sporadic contacts is graphed in two-dimensional space, a sort of doughnut shape emerges. Sporadic-E contacts are rarely shorter than 400 km. That is the hole. As the distance lengthens from 400 km, the occurrence of sporadic-E contacts increases until 2300 km is reached. That is the main part of the doughnut. There is a sharp drop-off at 2300 km amounting to a sharp boundary until around 2800 km or so, then contacts become more and more likely until 4600 km, when the second, but less sharply defined boundary is reached.

At 4600 km and longer, there are many possible configurations of hops that make the 4600 to 5200 km void less clearly defined. A 4800 km path could be completed by three 1600 km hops, for example. The MUF requirements for 1600

WIA News

New Licences and Operating Conditions

The long-awaited new licence and operating conditions and privileges for amateur stations were expected to be announced by the Spectrum Management Agency (SMA) by the end of May. It was not known in early May when they might come into effect.

These have been delayed since 1992, when foreshadowed amendments were first announced by the then Minister for Communications, David Beddall.

A lot of hard work by the WIA went into revisions of the Radiocommunications Regulations and the Technical Licence Specifications (TLSs), and negotiating acceptance of a whole variety of issues over operating conditions and privileges with the SMA.

While many of the conditions and privileges the WIA sought have been incorporated, we didn't win on everything. But that won't stop continuing effort by the WIA to gain advances in privileges and conditions in the future.

The new privileges and conditions granted by the amended Regulations and new TLSs provide increased freedom for amateur operators, freeing up some of the technical and operating restrictions which have existed up to now, and are certain to improve the experimental foundation of the hobby.

There are to be two new Licence sub-types under the general Amateur licence type recently created by the SMA. These are: the Intermediate Licence, replacing the old Combined Licence, and the Novice Limited Licence, a totally new class.

In addition, there is to be the Unrestricted (AOCP) and the Limited licences (AOLCP), and separate licences for amateur beacons and repeaters, making seven licence sub-types in all.

The Novice Limited will be a no-code licence giving Novice licence privileges on the 2 m and 70 cm bands, with access to digital (packet and RTTY) and FM voice modes. Novice Limiteds will be able to use a maximum RF power of 30 watts (average). Reciprocal licence agreements are yet to be negotiated with other countries, the SMA advised.

The Novice licence will have enhanced privileges above 30 MHz, providing access to the 70 cm band and to packet and RTTY digital modes on both 2 m and 70 cm. Permitted output power will increase to 100 watts pX (peak) and 30 watts pY (average). Novices will also get access to more band space on the 15 m and 2 m bands, in addition to 433-435 MHz and 438-440 MHz on 70 cm.

Limiteds are to get access to the 10 m band, but negotiations over the final details had not been completed by early May.

Intermediates are to get access to the full 15 m and 10 m bands and power restrictions below 50 MHz are to be lifted, allowing the use of 400 watts pX (peak) and 120 watts pY (average).

Unrestricted and Limited licensees will be permitted wideband modes, such as spread spectrum or pulse modulation above 420 MHz, including those "not yet invented". Restrictions on repeater cross-linking have been removed.

The amended Regulations affecting amateur radio were signed by the Governor General on 28 March, but the TLSs were not finalised by early May. These details are not complete. We'll have further, complete details, for *WIA News* when they come to hand.

km hops are not as high as for 1200 km, although finding three sporadic-E centres lined up optimally is not common either. You can make your own calculations and discover the various possibilities for difficult distances.

This line of logic suggests that there may be some prime distances for multi-hop sporadic E. If the most common single-hop contacts near the MUF fall into the 1800 to 2200 km range, then the most common multi-hop paths might be expected at 3600-4400, 5400-6600 km, and so forth.

On the basis of the above, the last sentence could logically explain the relative ease with which it was possible to work Darin VK0IX from southern Australia at distances between 3800 and 4000 km. But it still would not have been done, without the diligence shown by a few operators, who took appropriate steps to ensure that Darin was sufficiently convinced of the need to leave a warm room, tramp half a kilometre over ice to a cold shack, come on the air, and remain there for several hours! This he did on several occasions, so we are very grateful. However, the actions of all involved has ensured that Antarctica has at last been firmly placed on the VHF map of contacts.

Beacon Award

Six News, the UK Six Metre Group magazine, mentions the following award. *Funk Telegramm, announce the VHF beacon award. A glass painting 21 x 30 cm engraved with callsign and OP name, costing DM 25 including postage, will be awarded to those meeting the following criteria:*

Effective Jan 1 to Dec 31 UTC 1995. 6 m: Class 3 for 10 beacons, Class 2 for 15 beacons with 10 DXCC countries, Class 1 for 20 beacons with 15 countries. Send applications with date, UTC, frequency, beacon text, text repeat time, propagation mode (Es, Aurora, Tropo, MS etc.), to: Dieter Traxel, DK5PZ, Mainzerstr 5, D-54550 Daun, Germany. (Thanks to JA1VOK/HB9AMZ).

Although I said earlier that there are 44 beacons operating in the Asia/Pacific regions, just how many will be heard at the present time is difficult to predict. For Class 1 and 2 awards I think we would be beaten by the DXCC countries requirement. European amateurs will be best placed to meet DXCC requirements. I mention it here because it is something different, somewhat akin to SWL reporting.

Closure

Winter is approaching, evidence of which is the scarcity of reports of contacts on any bands. June/July may provide winter Es on six metres. In the absence of active operating, now may be the time to search your records for the information I have requested on tropo openings to other countries on 144, 432, 1296 and above.

Closing with two thoughts for the month:

1. When it pays better to talk than listen, change your company, and
2. Patriotism depends as much on mutual suffering as on mutual success. It is by that experience of all fortunes and all feelings that a great national character is created . . . Benjamin Disraeli.

73 from The Voice by the Lake

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Packet: to VK5ZK for VK5LP

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Spotlight on SWLing

*Robin L Harwood VK7RH**

Winter has well and truly arrived, which means that daytime listening is producing some interesting monitoring. Recently, Radio Moscow, also known as the "Voice of Russia", substantially reduced their foreign language output, which has made it easier to observe signals which have been blanketed for some time. I am noting many Middle Eastern signals, particularly on the 31 metre band, at around 0400 UTC. They stand out as some are operating on split channels and often are variable in frequency.

On 17 April a massive bomb demolished a Federal Government building in Oklahoma City with a huge number of casualties. Investigations that followed quickly led to the capture of a suspect with strong links to extremist right wing groups in the Midwest. These loosely knit groups have formed themselves in so-called citizens' militia and are hostile to the Federal Government. It also became apparent that several of these groups have utilised American domestic shortwave broadcasters to propagate their messages of hate and impending doom.

One of these leaders has a regular show over WWCR in Nashville Tennessee. This was highlighted on the prime time TV evening news, which had the effect of increasing the WWCR audience. One of the militia groups openly alleged that the terrorist bomb was in reality an FBI plot to discredit the militia and wipe them out. Therefore, it called on "responsible people" to arm themselves and prepare themselves for the coming "Armageddon". In last month's column, I mentioned that another extremist group in Japan had come under suspicion, after people were gassed in a Tokyo subway with a deadly nerve agent called sarin. This group also used shortwave radio extensively to propagate their message that "Armageddon" was imminent. This group "Aum Shinryko" or "Supreme Truth" hired time over the huge transmitter network of Radio Moscow's World Service. About 12 months ago, they suddenly reduced their English release, yet continued their Russian and Japanese language releases. After the sarin gas attacks, the Russian broadcasting authorities quickly terminated "Radio Aum Shinryko" and deregistered the religious organisation in the Russian Federation. Media reports from Japan state that the Tokyo Government will be doing likewise.

These two separate incidents have highlighted a new and worrying trend. That is the utilisation of shortwave radio by extremist doomsday groups to broadcast their hate-filled messages against the established order. WWCR seems to be the main vehicle for many of these extreme right-wing American groups, which are lumped in between various religious groups who also use the Nashville station. "Radio Aum Shinryko" has been closed down in Russia and its leaders are in hiding in Japan, following the assassination of one of its alleged "scientific" experts by a Japanese of Korean extraction.

As mentioned earlier, the Russian external services have made some cutbacks to their output. A further eight languages were axed on 2 April, which means that there are only about 35 language services left. To contrast this, at the height of the Cold War Moscow was broadcasting in 69 languages. At the same time, the number of simultaneous frequencies carrying the English releases of the VOR World Service have also been reduced. It is strange, now, not being able to hear Moscow on a multiplicity of channels simultaneously.

Well, that is all for this month. Don't forget, if you have any news you would like to pass on, I can be reached at the addresses below.

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HF PREDICTIONS

Evan Jarman VK3ANI

The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μV (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μV in 50 ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μV at the receiver's input and the S-meter scale is 6 dB per S-point.

μV in 50 ohms	S-points	dB(μV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4
0.78	S3	-2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

VK EAST The major part of NSW and Queensland.

VK SOUTH Southern-NSW, VK3, VK5 and VK7.

VK WEST The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 16.5.

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VK SOUTH — SOUTH PACIFIC

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	15.2	16	11.4	8	19	7	-6	-26
2	15.7	16	11.7	9	20	9	-4	-23
3	15.9	17	11.9	12	21	10	-3	-21
4	15.7	18	11.8	18	22	10	-3	-23
5	14.7	20	11.1	29	22	6	-10	-33
6	12.4	24	9.3	39	16	-7	-29	...
7	10.3	27	7.8	40	4	-26	...	...
8	8.8	30	6.7	38	-9	...	...	...
9	7.8	32	5.9	36	-21	...	...	...
10	7.2	33	5.4	34	-34	...	...	...
11	7.1	33	5.3	33	-35	...	...	...
12	7.3	33	5.4	34	-31	...	...	...
13	7.4	33	5.5	35	-29	...	...	...
14	7.4	33	5.5	35	-29	...	...	...
15	7.5	33	5.6	36	-28	...	...	...
16	6.9	34	5.3	33	-37	...	...	...
17	6.7	34	5.2	32	...	...	...	...
18	7.1	34	5.4	34	-35	...	...	...
19	7.0	33	5.4	33	-37	...	...	...
20	7.8	26	6.1	29	-21	...	...	...
21	9.8	21	7.6	24	-1	-31	...	...
22	11.7	18	9.0	17	9	-12	-33	...
23	13.3	17	10.2	12	14	-2	-19	...
24	14.2	16	10.8	8	16	2	-12	-34

VK WEST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	17.5	13	13.2	-15	17	12	3	-9
2	18.6	13	14.0	-17	18	14	7	-5
3	19.3	13	15.0	-15	19	15	9	-2
4	19.5	14	14.6	-9	21	17	10	-1
5	19.3	15	14.5	2	24	18	10	-1
6	17.3	18	13.1	21	26	16	5	-10
7	14.6	22	11.0	33	24	8	-6	-27
8	12.2	26	9.2	39	17	-3	-23	...
9	10.4	29	7.8	40	9	-16	...	...
10	9.2	32	6.9	40	1	-30	...	...
11	8.7	33	6.5	40	-3	-37	...	...
12	8.5	33	6.4	39	-4	-39	...	...
13	8.8	32	6.5	40	-2	-35	...	...
14	8.9	32	6.6	40	0	-34	...	...
15	8.9	32	6.7	40	0	-34	...	...
16	9.1	32	6.7	41	0	-32	...	...
17	8.3	33	6.4	39	-5	...	...	...
18	8.1	34	6.3	38	-7	...	...	...
19	8.6	33	6.6	40	-3	-38	...	...
20	8.5	28	6.5	32	-5	-38	...	...
21	9.6	22	7.0	23	2	-23	...	...
22	12.1	18	9.3	14	12	-4	-22	...
23	14.5	16	11.1	2	16	5	-7	-25
24	16.4	14	12.5	-10	17	10	0	-14

VK EAST — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	8.3	14	6.6	12	-6	-34	...	...
2	7.6	6	5.8	4	-8	-34	...	...
3	7.3	0	5.7	-2	-9	-34	...	...
4	9.8	3	7.6	-14	1	-14	-31	...
5	14.1	7	10.9	-33	7	1	-7	-22
6	16.2	7	12.6	...	8	5	-2	-14
7	15.1	7	11.3	-37	7	3	-4	-18
8	12.9	7	9.7	-25	6	-1	-13	-30
9	10.6	5	8.0	-16	3	-11	-26	...
10	9.0	4	6.7	-7	-2	-21	...	...
11	8.0	5	5.9	0	-7	-31	...	...
12	7.9	10	5.8	8	-8	-36	...	...
13	8.1	17	6.0	17	-7	-37	...	...
14	8.2	25	6.1	27	-6	-38	...	...
15	7.5	27	5.8	29	-15	...	...	...
16	7.4	30	5.7	31	-16	...	...	...
17	7.6	30	5.8	33	-15	...	...	...
18	7.8	30	5.9	33	-13	...	...	...
19	7.9	30	5.9	33	-12	...	...	...
20	7.8	30	6.0	34	-11	...	...	...
21	8.0	30	6.1	34	-10	...	...	...
22	8.0	30	6.2	34	-10	...	...	...
23	7.5	25	5.9	26	-14	...	...	...
24	7.5	18	5.9	18	-13	...	...	...

VK SOUTH — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	8.4	24	6.4	26	-4	-34	...	...
2	8.1	18	6.3	17	-5	-34	...	...
3	10.5	17	7.8	12	7	-12	-31	...
4	14.4	14	11.4	0	14	4	-7	-25
5	15.8	11	12.8	-18	13	7	-2	-16
6	17.0	10	13.7	-27	12	8	0	-11
7	16.0	9	12.8	-27	11	6	-2	-15
8	14.3	9	11.3	-20	9	1	-9	-25
9	12.1	9	9.6	-12	6	-6	-20	...
10	9.8	7	7.7	-4	0	-19	-39	...
11	8.3	7	6.5	3	-8	-34	...	...
12	7.4	9	5.8	9	-15	...	...	...
13	7.4	15	5.7	15	-17	...	...	...
14	7.5	24	5.8	25	-17	...	...	...
15	7.7	27	5.9	29	-16	...	...	...
16	7.8	29	6.0	32	-14	...	...	...
17	8.0	29	6.1	33	-13	...	...	...
18	8.0	29	6.2	33	-13	...	...	...
19	8.0	29	6.2	33	-13	...	...	...
20	7.6	29	6.0	32	-17	...	...	...
21	7.7	29	6.0	32	-17	...	...	...
22	8.3	29	6.5	34	-11	...	...	...
23	8.0	30	6.2	34	-11	...	...	...
24	7.9	28	6.2	31	-11	...	...	...

VK WEST — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	7.5	28	5.8	30	-13	...	...	...
2	7.3	19	5.6	19	-15	...	...	...
3	9.9	16	7.4	11	3	-18	...	...
4	14.4	14	11.1	-1	14	4	-8	-26
5	16.3	11	12.5	-20	13	7	0	-14
6	17.3	10	13.1	-31	12	9	2	-10
7	17.9	9	13.4	-35	12	9	3	-8
8	17.1	9	12.8	-34	11	8	0	-11
9	15.2	9	11.4	-27	10	5	-5	-19
10	11.1	10	8.8	-15	8	-2	-14	-34
11	10.7	10	8.0	-3	4	-13	-31	...
12	9.1	12	6.8	6	-2	-26	...	...
13	8.0	17	6.0	17	-9	...	...	...
14	7.8	26	5.9	26	-11	...	...	...
15	8.1	28	6.0	32	-9	...	...	...
16	8.3	30	6.1	35	-8	...	...	...
17	8.3	31	6.2	36	-7	...	...	...
18	8.4	31	6.2	37	-6	...	...	...
19	8.5	31	6.4	37	-5	...	...	...
20	8.5	31	6.4	37	-5	...	...	...
21	8.0	31	6.1	35	-10	...	...	...
22	7.9	31	6.1	35	-12	...	...	...
23	8.9	30	6.5	38	-2	-36	...	...
24	8.4	31	6.4	37	-6	...	...	...

VK EAST — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	20.5	12	15.6	-33	17	16	11	2
2	20.1	12	15.3	-37	16	15	10	1
3	20.4	12	15.5	-38	16	15	11	2
4	21.0	13	15.9	-36	17	17	12	4
5	21.6	13	16.5	-31	19	18	14	6
6	20.7	14	15.8	-21	20	18	13	3
7	18.7	15	14.3	-6	21	16	8	-4
8	16.0	17	12.2	15	22	10	-2	-19
9	13.5	20	10.3	33	18	-1	-19	...
10	11.4	23	8.7	37	8	-19	...	...
11	10.4	25	7.9	39	1	-30	...	...
12	10.1	26	7.7	40	-1	-36	...	...
13	9.8	26	7.4	40	-5	...	...	...
14	9.7	27	7.4	40	-6	...	...	...
15	9.6	27	7.3	40	-6	...	...	...
16	10.1	26	7.7	41	-2	-36	...	...
17	9.4	27	7.2	39	-9	...	...	...
18	7.8	28	6.0	33	-31	...	...	...
19	7.5	28	5.8	31	-37	...	...	...
20	8.1	28	6.3	34	-25	...	...	...
21	11.8	21	9.2	31	10	-13	-37	...
22	17.3	16	13.4	3	22	14	4	-10
23	20.1	14	15.5	-14	21	18	12	1
24	20.5	13	15.7	-25	19	17	12	2

VK SOUTH — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	16.2	10	12.3	-32	11	7	-1	-15
2	17.0	10	12.9	-38	11	8	1	-10
3	17.5	10	13.2	...	11	9	3	-8
4	17.7	10	13.3	-39	12	10	4	-7
5	17.6	11	13.3	-35	13	10	4	-7
6	17.0	12	12.8	-26	14	10	2	-10
7	15.4	12	11.6	-13	14	6	-4	-21
8	13.3	15	10.1	7	12	-2	-18	...
9	11.1	20	8.4	26	5	-21	...	...
10	9.3	22	7.1	30	-10	...	...	...
11	8.2	24	6.2	29	-26	...	...	...
12	8.0	25	6.0	31	-30	...	...	...
13	8.1	26	6.1	33	-27	...	...	...
14	8.2	26	6.1	33	-27	...	...	...
15	8.1	26	6.1	33	-27	...	...	...
16	8.3	26	6.2	33	-25	...	...	...
17	8.4	26	6.4	34	-23	...	...	...
18	8.4	26	6.4	34	-24	...	...	...
19	7.0	26	5.4	26	...	...	...	...
20	6.8	26	5.3	24	...	...	...	...
21	8.7	26	6.8	35	-18	...	...	...
22	11.3	14	8.8	9	4	-16	-38	...
23	13.7	11	10.6	-10	10	-1	-14	-34
24	15.4	10	11.8	-23	12	5	-4	-20

VK WEST — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	19.6	14	15.1	-21	19	16	10	0
2	20.2	13	15.4	-29	18	16	11	1
3	19.9	13	15.2	-34	16	15	10	1
4	20.1	13	15.4	-35	16	15	10	1
5	20.6	13	15.6	-34	17	17	12	3
6	21.2	14	16.1	-29	19	18	14	5
7	21.2	14	16.1	-21	21	19	14	6
8	19.9	15	15.2	-8	23	19	12	2
9	17.7	17	13.6	10	24	16	6	-6
10	15.1	20	11.4	32	23	7	-8	-29
11	12.6	21	9.6	36	14	-8	-30	...
12	10.7	23	8.2	37	1	-29	...	...
13	10.0	24	7.8	37	-5	...	...	...
14	9.8	25	7.4	39	-8	...	...	...
15	9.5	25	7.2	39	-11	...	...	...
16	9.4	25	7.2	38	-12	...	...	...
17	9.5	25	7.2	38	-11	...	...	...
18	9.9	25	7.5	40	-7	...	...	...
19	9.4	25	7.2	38	-12	...	...	...
20	8.0	26	6.2	32	-34	...	...	...
21	7.8	26	6.0	31	-38	...	...	...
22	10.2	20	7.7	29	-3	-36	...	...
23	14.3	16	11.1	11	16	2	-13	-35
24	17.9	14	13.8	-9	20	14	5	-8

VK EAST — EUROPE

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	11.2	-1	8.0	...	3	-2	-12	-28
2	11.3	-6	8.1	...	1	-2	-10	-24
3	12.3	-5	9.0	...	0	0	-6	-18
4	13.9	-3	9.8	...	-2	1	-2	-11
5	15.4	0	11.2	...	-3	2	0	-6
6	16.2	1	11.9	...	-3	3	2	-4
7	16.3	2	11.9	...	-3	4	3	-2
8	16.3	4	12.0	...	0	5	2	-5
9	14.7	3	11.2	...	3	2	-3	-14
10	12.3	2	9.4	...	4	-2	-12	-28
11	10.4	2	7.9	-24	2	-9	-23	...
12	9.7	4	7.4	-13	1	-14	-31	...
13	9.5	8	7.2	-4	1	-17	-37	...
14	9.3	12	7.0	6	0	-21	...	...
15	9.2	17	6.9	15	0	-24	...	...
16	9.2	21	7.0	21	0	-26	...	...
17	9.6	25	7.3	30	3	-23	...	...
18	9.2	27	7.0	33	0	-30	...	...
19	8.0	29	6.1	33	-12	...	...	...
20	7.7	30	6.0	32	-15	...	...	...
21	9.9	29	7.6	38	6	-22	...	...
22	10.3	24	7.8	27	9	-12	-34	...
23	12.6	16	8.9	-4	14	4	-7	-25
24	11.7	6	8.3	-28	7	0	-11	-28

VK SOUTH — EUROPE

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	11.4	9	8.0	-17	8	-1	-14	-32
2	11.4	1	8.0	...	4	-1	-11	-28
3	12.6	-1	8.9	...	2	1	-6	-18
4	14.4	0	9.9	...	0	2	-1	-10
5	16.2	2	11.5	...	-2	3	2	-4
6	17.2	3	12.2	...	-3	4	3	-1
7	17.3	3	12.3	...	-3	4	3	-2
8	16.1	2	12.1	...	-1	3	0	-8
9	13.9	0	10.4	...	1	1	-5	-16
10	11.4	-2	8.6	...	2	-4	-14	-30
11	9.6	-4	7.2	-29	0	-11	-25	...
12	8.5	-3	6.4	-16	-2	-19	-38	...
13	8.4	2	6.3	-6	-3	-24	...	...
14	8.7	9	6.4	3	-2	-26	...	...
15	8.8	16	6.5	14	-2	-28	...	...
16	8.8	21	6.5	22	-2	-31	...	...
17	8.9	25	6.6	28	-2	-32	...	...
18	9.1	27	6.8	33	0	-31	...	...
19	9.1	29	6.9	36	0	-32	...	...
20	8.5	29	6.5	35	-6	...	...	...
21	8.3	30	6.4	34	-8	...	...	...
22	8.7	30	6.7	36	-2	-35	.....	...
23	8.9	28	6.8	33	-1	-32	...	...
24	12.1	20	8.4	11	16	2	-11	-32

VK WEST — EUROPE

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	11.9	19	8.2	12	14	-1	-16	-38
2	11.8	9	8.2	-18	8	-2	-14	-33
3	13.0	4	9.1	...	5	1	-7	-21
4	15.0	4	10.2	...	3	4	-1	-11
5	17.1	5	12.0	...	0	5	3	-4
6	18.1	5	12.7	...	-1	5	4	-1
7	18.2	5	12.8	...	-2	5	4	-1
8	18.2	5	12.8	...	-1	5	4	-1
9	18.3	5	12.9	...	0	5	3	-3
10	16.5	4	12.5	...	2	4	0	-10
11	13.9	3	10.5	...	4	0	-8	-22
12	11.7	3	8.8	-29	3	-6	-19	-38
13	10.0	4	7.6	-13	0	-15	-33	...
14	9.5	9	7.2	-1	0	-21	...	...
15	9.5	15	7.2	12	0	-24	...	...
16	9.4	20	7.1	21	0	-27	...	...
17	9.4	24	7.1	29	0	-29	...	...
18	9.5	26	7.1	33	0	-29	...	...
19	9.8	27	7.4	37	2	-26	...	...
20	9.5	28	7.2	37	0	-30	...	...
21	8.4	28	6.5	34	-9	...	...	...
22	8.2	29	6.3	33	-12	...	...	...
23	8.7	29	6.7	35	-5	-39	...	...
24	9.2	28	7.0	35	-1	-32	...	...

VK EAST — EUROPE (Long path)

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	14.1	19	9.6	5	19	10	1	-13
2	12.9	20	8.8	10	18	7	-4	-21
3	12.0	21	8.2	17	17	4	-9	-29
4	11.5	25	7.9	27	17	1	-14	-35
5	11.5	24	8.0	27	16	-1	-17	...
6	11.4	24	8.0	27	14	-4	-21	...
7	11.1	22	8.4	23	12	-5	-22	...
8	9.5	16	7.1	11	4	-16	-36	...
9	8.0	4	6.1	-1	-2	-22	...	...
10	7.8	-4	6.1	-11	-2	-19	-37	...
11	8.5	-7	6.5	-21	0	-14	-30	...
12	8.7	-11	6.3	-29	0	-11	-25	...
13	8.7	-15	6.5	-36	0	-9	-21	...
14	8.8	-17	6.5	...	0	-8	-19	-37
15	8.9	-20	6.6	...	-2	-8	-19	-36
16	8.9	-26	6.7	...	-5	-11	-21	-39
17	8.3	-38	6.3	...	-10	-18	-31	...
18	8.2	-38	6.3	...	-10	-18	-32	...
19	9.2	-16	6.7	...	0	-6	-17	-33
20	11.5	-4	8.9	...	1	-3	-11	-25
21	13.9	4	10.6	...	4	2	-5	-16
22	15.8	10	11.9	-31	10	7	1	-10
23	16.3	15	11.1	-15	16	12	5	-6
24	15.1	17	10.3	-3	18	12	4	-7

VK SOUTH — EUROPE (Long path)

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	13.4	16	9.3	-2	16	8	-2	-16
2	12.4	14	8.7	11	16	5	-7	-25
3	11.6	25	8.1	28	17	2	-13	-35
4	11.3	25	7.9	29	16	0	-16	-39
5	11.4	26	8.1	31	17	1	-15	-38
6	11.6	27	8.3	28	17	1	-15	-37
7	10.3	21	8.4	24	7	-14	-36	...
8	8.7	14	6.8	12	-2	-27	...	...
9	7.7	6	6.0	3	-7	-32	...	...
10	7.7	0	5.9	-4	-6	-28	...	...
11	7.8	-5	6.0	-12	-4	-22	...	...
12	8.0	-10	6.1	-19	-2	-17	-34	...
13	8.1	-13	6.4	-26	-1	-13	-28	...
14	8.2	-24	6.3	...	-6	-17	-31	...
15	8.3	-35	6.4	...	-11	-21	-36	...
16	8.2	...	6.4	...	-17	-26	...	...
17	7.8	...	6.1	...	-26	-37	...	...
18	7.8	...	6.1	...	-27	-38	...	...
19	8.6	...	6.5	...	-16	-24	-37	...
20	10.3	-12	8.2	...	-1	-4	-13	-27
21	12.3	-5	9.9	...	-1	-2	-8	-20
22	14.1	1	11.4	...	1	1	-4	-15
23	15.3	7	10.7	...	6	5	-1	-11
24	14.3	13	9.9	-21	13	8	1	-11

VK WEST — EUROPE (Long path)

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	13.1	7	9.1	-26	8	2	-5	-19
2	12.1	11	8.5	-9	9	1	-10	-26
3	11.4	12	8.0	-1	9	-2	-15	-33
4	11.1	15	7.9	6	10	-3	-17	-37
5	11.3	16	8.1	8	11	-2	-16	-36
6	12.3	18	8.8	10	14	2	-10	-28
7	13.4	17	9.7	8	16	6	-5	-21
8	12.5	13	9.9	5	10	-2	-16	-36
9	10.2	9	8.4	0	2	-14	-31	...
10	8.6	1	6.7	-8	-4	-22	...	...
11	7.7	-8	5.9	-13	-6	-24	...	...
12	7.6	-14	5.8	-19	-5	-21	-39	...
13	7.8	-17	5.9	-26	-4	-17	-32	...
14	7.9	-28	6.0	...	-8	-20	-35	...
15	8.0	...	6.3	...	-14	-24	-39	...
16	8.1	...	6.1	...	-19	-28	...	...
17	8.2	...	6.3	...	-22	-31	...	...
18	8.2	...	6.3	...	-25	-33	...	...
19	7.7	...	6.0	...	-30	...	...	...
20	7.7	...	6.0	...	-27	-38	...	...
21	8.5	...	6.4	...	-14	-22	-35	...
22	10.2	-13	8.2	...	-3	-7	-16	-31
23	12.3	-4	9.9	...	-1	-4	-12	-25
24	13.8	2	9.7	...	3	0	-7	-19

VK EAST — MEDITERRANEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	12.2	7	9.2	-27	7	0	-11	-28
2	12.7	2	9.6	...	4	0	-7	-21
3	15.6	4	11.6	...	2	4	0	-8
4	18.9	6	14.3	...	0	6	5	0
5	20.4	6	15.7	...	-2	6	6	2
6	20.5	6	15.8	...	-2	6	6	1
7	19.4	5	14.7	...	-1	5	4	-1
8	17.1	5	13.0	...	1	4	1	-7
9	14.4	3	10.9	...	3	2	-5	-17
10	12.1	2	9.2	-39	3	-3	-14	-31
11	10.4	2	7.9	-22	2	-10	-25	...
12	9.8	6	7.4	-9	2	-15	-33	...
13	9.8	12	7.4	-3	2	-17	-37	...
14	9.7	18	7.4	15	3	-20	...	...
15	9.6	25	7.3	29	3	-23	...	...
16	9.7	27	7.3	34	4	-23	...	...
17	10.0	28	7.6	38	6	-20	...	...
18	9.7	29	7.4	38	4	-24	...	...
19	8.6	30	6.6	36	-4	-38	...	...
20	8.3	30	6.4	35	-7	...	...	...
21	10.3	29	7.7	39	9	-17	...	...
22	8.9	28	6.8	34	-1	-32	...	...
23	8.9	28	6.8	16	-1	-27	...	...
24	13.0	14	9.9	-5	12	1	-11	-30

VK SOUTH — MEDITERRANEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	12.0	14	9.1	-2	11	-1	-15	-35
2	12.4	7	9.3	-28	7	0	-11	-28
3	15.4	6	12.1	...	5	5	0	-10
4	17.4	7	14.4	...	2	7	5	0
5	19.6	6	14.7	...	0	6	5	0
6	19.4	5	14.6	...	0	5	4	-1
7	18.5	5	13.9	...	0	5	3	-3
8	16.6	4	12.4	...	1	4	0	-8
9	14.2	2	10.6	...	2	1	-6	-18
10	11.7	0	8.8	-38	2	-5	-16	-35
11	9.8	0	7.4	-23	0	-13	-30	...
12	8.7	1	6.5	-9	-3	-23	...	...
13	8.6	8	6.4	-2	-4	-26	...	...
14	8.8	16	6.5	13	-3	-30	...	...
15	9.0	24	6.6	27	-2	-32	...	...
16	9.0	26	6.6	32	-2	-33	...	...
17	9.1	28	6.8	35	-1	-33	...	...
18	9.2	29	6.9	37	0	-31	...	...
19	9.2	29	7.0	37	0	-31	...	...
20	8.7	29	6.6	35	-5	-39	...	...
21	8.5	29	6.6	35	-6	...	...	...
22	8.1	29	6.3	34	-11	...	...	...
23	7.9	29	6.1	33	-13	...	...	...
24	11.5	21	8.7	23	11	-8	-28	...

VK WEST — MEDITERRANEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	11.1	20	8.5	19	10	-8	-27	...
2	11.6	11	8.7	-7	7	-5	-20	...
3	14.2	8	11.2	-37	8	3	-5	-19
4	17.4	8	13.2	...	6	7	3	-6
5	18.5	6	14.4	...	4	6	3	-5
6	18.6	6	14.1	...	2	6	3	-4
7	18.7	5	14.1	...	2	6	3	-4
8	18.2	5	13.8	...	2	5	2	-6
9	16.2	5	12.6	...	3	4	1	-11
10	14.5	4	11.0	...	4	1	-7	-21
11	12.2	4	9.2	-29	3	-6	-18	-38
12	10.3	5	7.8	-13	0	-16	-34	...
13	9.0	7	6.8	0	-5	-29	...	...
14	8.8	14	6.8	12	-7	-37	...	...
15	8.7	21	6.6	24	-7	...	...	...
16	8.7	24	6.6	29	-7	...	...	...
17	8.7	27	6.6	33	-8	...	...	...
18	8.8	28	6.8	35	-7	...	...	...
19	8.8	28	6.8	36	-5	-39	...	...
20	8.9	28	6.8	36	-7	...	...	...
21	8.0	29	6.2	33	-16	...	...	...
22	7.8	29	6.0	32	-19	...	...	...
23	8.1	29	6.2	34	-14	...	...	...
24	8.1	29	6.2	34	-14	...	...	...

VK EAST — USA/CARIBBEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	21.3	8	16.1	...	4	9	8	3
2	21.4	10	16.1	...	10	13	10	4
3	21.1	13	16.3	-30	17	17	13	6
4	19.2	19	15.4	-1	25	21	15	5
5	17.5	26	14.2	25	30	22	13	1
6	16.8	24	13.3	36	30	20	9	-5
7	15.0	23	11.4	40	26	12	-2	-21
8	12.6	26	9.5	41	19	0	-19	...
9	10.7	28	8.1	40	10	-14	-38	...
10	9.9	28	7.5	39	6	-22	...	...
11	9.7	29	7.3	38	4	-24	...	...
12	9.5	29	7.1	38	3	-26	...	...
13	9.4	27	7.0	34	2	-27	...	...
14	8.8	20	6.8	20	-2	-29	...	...
15	9.3	14	7.1	8	1	-21	...	...
16	9.4	7	7.1	-5	0	-19	...	...
17	8.1	-4	6.2	-14	-5	-25	...	...
18	7.9	-12	6.1	-21	-5	-23	...	...
19	10.1	-6	7.9	-39	0	-10	-23	...
20	14.2	1	11.0	...	1	0	-6	-18
21	17.8	4	13.7	...	0	4	1	-6
22	19.7	5	15.1	...	-1	5	4	-1
23	20.4	5	15.5	...	-1	6	5	0
24	20.9	6	15.8	...	0	7	6	1

VK SOUTH — USA/CARIBBEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	19.9	9	15.4	...	5	9	7	1
2	20.1	11	15.0	...	12	13	10	3
3	20.0	15	14.9	-18	20	18	12	4
4	19.1	18	14.3	11	26	20	13	2
5	17.2	22	12.8	33	29	19	6	-6
6	14.7	24	11.0	38	25	11	-3	-22
7	12.1	26	9.0	40	17	-2	-21	...
8	10.2	29	7.6	39	8	-18	...	...
9	9.0	29	6.7	36	-1	-32	...	...
10	8.8	29	6.5	36	-2	-34	...	...
11	9.1	29	6.7	37	0	-31	...	...
12	9.2	29	6.8	37	1	-29	...	...
13	9.2	28	6.9	35	1	-29	...	...
14	8.8	28	6.8	21	-1	-28	...	...
15	8.8	13	6.8	9	-1	-25	...	...
16	9.5	7	7.1	-5	0	-18	-38	...
17	8.8	-1	6.7	-14	-2	-19	-39	...
18	8.7	-7	6.6	-23	-2	-17	-35	...
19	9.8	-6	7.2	-35	0	-11	-24	...
20	12.5	-1	9.6	...	1	-2	-11	-26
21	15.0	2	11.5	...	1	2	-3	-13
22	17.0	4	13.0	...	0	4	1	-7
23	18.1	5	13.7	...	0	5	3	-3
24	19.3	7	14.5	...	2	7	5	0

VK WEST — USA/CARIBBEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	17.9	5	13.6	...	0	6	4	-2
2	19.0	9	14.3	...	3	9	7	1
3	19.5	11	15.2	...	9	12	10	3
4	19.1	15	14.8	-37	16	16	12	4
5	17.7	19	14.1	11	22	19	13	3
6	16.6	23	13.2	13	27	20	12	0
7	15.6	27	12.6	35	31	20	9	-5
8	14.4	26	10.9	40	27	13	-1	-20
9	11.9	29	8.9	41	20	0	-19	...
10	10.1	31	7.7	40	10	-11	-39	...
11	8.9	32	6.7	38	2	-28	...	...
12	8.8	32	6.5	38	1	-30	...	...
13	9.0	31	6.7	37	3	-26	...	...
14	9.1	23	6.8	23	3	-22	...	...
15	8.7	16	6.7	13	1	-23	...	...
16	8.7	8	6.7	-1	1	-19	...	...
17	9.4	4	7.1	-13	3	-12	-29	...
18	9.4	-1	7.2	-24	2	-10	-25	...
19	8.8	-8	6.7	-29	1	-10	-25	...
20	8.6	-14	6.6	-35	1	-9	-23	...
21	9.8	-11	7.2	...	1	-5	-16	-33
22	12.5	-3	9.7	...	0	0	-6	-18
23	15.0	1	11.5	...	-1	2	-1	-9
24	16.9	3	12.9	...	-1	4	2	-4

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● TRANSMITTER valve 8906, similar 2C39A, $18 ea; DOOR KNOB capacitors 20 pF, 40 pF, 50 pF, 100 pF, 5 kV $6.80 ea. D Dauner VK2EDD (02) 724 6982.

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FOR SALE SA

● ANTENNA 8 el log periodic for HF bands, 10-30 MHz continuous, with all hardware, instructions, good condition, $450 plus freight. Offers considered. Will not fit in my yard. Paul VK5MAP QTHR (086) 51 2398.

● TOKYO Hi-power HL160V25A 2 metre amp, GaAsFET preamp, 160 watts out, $450; YEASU FT-209RH 2 metre HH with mike, battery case, nicad pack, charger, $275. Terry VK5ATN QTHR (08) 863 1268 AH.

FOR SALE WA

● AR 1500 H/held scanner, 500 kHz — 1.3 GHz, FM AM SSB, 1000 memories, as new, $625; YAESU FT-290 RII 2 metre all mode with case, ext mike, and battery holder, $650; YAESU FT-620 6 metre base transceiver AM-CW-SSB, excellent condition, $225; UNIDEN/PRESIDENT HR2510 10 m transceiver, brand new, still in box, never used, $300. John VK6NU (09) 446 1345 6-7pm WST.

FOR SALE TAS

● TL922 Linear amp, two new 3500Z tubes, 2000A Dentron tuner, SM220 Monitor, free standing tower with rotator, tri-band beam, quarter wave vertical 40 m antenna, golden bug, phone patch, co-ax cable. Don VK7NN (003) 30 2688.

WANTED ACT

● SERVICE manual or circuit diagram for Eddystone 990B VHF Communications receiver, will copy and return and cover all costs. Dave VK1ZDW QTHR or (06) 291 7856 AH or (06) 280 2695 BH.

WANTED NSW

● UNUSED 2 m transmitter, faulty or not, student cannot afford commercials, will pay postage. Paul Titze VK2THN 2/84 Railway Parade, Granville NSW 2142.

● MANUAL or circuit for RCA oscilloscope model WO-33A, will pay costs. Nick L20106 QTHR.

● ICOM IC12G, GE, GAT technical information (service manuals, layouts, etc). Will cover any copying and postage costs. Bob VK2CAN QTHR (02) 416 3727.

● INFORMATION about external microphone and speaker connection for Alinco DJ100T. Noel VK2YXM QTHR (02) 871 3079.

● SERVICE manual urgently required for Kenwood TS530S transceiver, will repay costs or copy and return. Maurie VK2OW QTHR (02) 838 1834.

WANTED VIC

● KENWOOD VFO120. Jim VK3YJ QTHR (03) 315 9387.

● DESPERATE — power supply for FT200; also circuit etc for Wireless set No 62. Clem Jarvis VK3CYD QTHR (051) 27 4248 AH.

● EX MILITARY aerial screw-in sections, approx 95 cm long 1.6 cm or 2.2 cm diameter

or telescopic style mast. Don VK3DON QTHR (03) 848 3059 AH or (03) 675 3601 BH.

● INTEGRATED circuit TC5080P, or its internal design, or a substitute circuit for its use in tcvr IC22S or a damaged IC22S. Harley VK3CHK QTHR (03) 555 4698.

● EDDYSTONE EC10 MK2 or trio 9R59DS Comm RX, must be in good condx. Damien VK3CDI (054) 27 3121.

WANTED QLD

● CABLE mounting 4 pin sockets, also 4 pin cable mounting plug for a restoration job. Graham VK4WEM QTHR.

WANTED SA

● SERVICE manual or photo copy for Kenwood TS-440S, power lead for Kenwood TS-130S, TS-440S; 60 cm of orange pvc tubing 16 mm OD, 13 mm ID. Will pay costs. Paul VK5MAP QTHR (086) 51 2398.

WANTED WA

● 430 MHz MODULE for Yaesu FT-726R; also SAT-726 duplex module for same. John VK6NU, Not QTHR, (09) 446 1345 6-7pm WST.

MISCELLANEOUS

● THE WIA QSL Collection (now Federal) requires QSLs. All types welcome especially rare DX pictorial cards special issue. Please contact Hon. Curator Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350.

ar

What's New

Bob Tait VK3UI introduces new products of interest to radio amateurs.*

I recently met Kevin Cavanagh VK4SP at the EMDRC White Elephant Day held at Box Hill in Victoria. Kevin and his wife travelled down from Queensland with a whole pile of amateur radio goodies. These adorned their very impressive display of data controllers, modems and noise reduction systems. Their business specialises in digital modes, offering the amateur everything they are likely to need to get into packet, RTTY, AMTOR or Internet.

If you want Baycom, JVFax, Mscan, Packratt, or the new Pico-Packet, give Kevin a ring and compare his prices. Ask about his trade-in offer on your old packet modem. Among the many agencies are popular brands such as PacComm, AEA, Tigertronics, JSP Communications Inc filters, and Drake Communications Receivers. A large range of software is also available for SSTV and Weather Fax, plus many Windows based programs for the data enthusiast.

Kevin Cavanagh also offers a free call service to his customers on 1800 639 099 as well as mail order service with same day dispatch anywhere in Australia. Bankcard, VISA, Mastercard, Money Orders and Personal Cheques accepted.

Kevin Cavanagh is located at 222 Brisbane Valley Highway, Wanora, Queensland, 4306 — Phone/Fax (074) 643 954.

**C/o PO Box 2175, Caulfield Junction VIC 3161*

ar

Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

J L (LEN)	GREY	VK2AKO
J H (Jim)	O'BRIEN	VK2BHU
A D	EYERS	VK5ADE

ar

Hamads

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines per issue free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclose a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 2175, Caulfield Junction, Vic 3161, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.

*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $25.00 for four lines, plus $2.25 per line (or part thereof) Minimum charge — $25.00 pre—payable.

State: .....

Not for publication: ❑ Miscellaneous ❑ For Sale ❑ Wanted

Name:..... Call Sign: ..... Address: .....

TRADE PRACTICES ACT

It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are complied with **strictly.**

VICTORIAN CONSUMER AFFAIRS ACT

All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the box-holder or seller of the goods.

TYPESETTING AND PRINTING:

Industrial Printing and Publishing Pty Ltd, 122 Dover Street, Richmond, 3121. Telephone: 428 2958

MAIL DISTRIBUTION:

R L Polk & Co Pty Ltd, 96 Herbert St, Northcote, Vic. 3070. Tel: (03) 482 2255

CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

BACK ISSUES

Available only until stocks are exhausted. $4.00 to members, which includes postage within Australia.

PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus $2.00 for each additional issue in which the article appears).

The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

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HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 2175
Caulfield Junction, Vic 3161

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms:.....

.....

Call Sign (if applicable):.....

Address:.....

.....

.....

State and Postcode:.....

WIA Morse Practice Transmissions

VK2BWI Nightly at 2000 local on 3550 kHz

VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm

VK3COD Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz

VK3RCW Continuous on 144.975 MHz 5 wpm, 10 wpm

VK4WIT Monday at 0930 UTC on 3535 kHz

VK4WSS Tuesday at 0930 UTC on 3535 kHz

VK4WCH Wednesday at 1000 UTC on 3535 kHz

VK4AV Thursday at 0930 UTC on 3535 kHz

VK4WIS Sunday at 0930 UTC on 3535 kHz

VK5AWI Nightly at 2030 local on 3550 kHz

VK5RCW Continuous on 144.975 MHz, 5 wpm to 12 wpm

VK6WIA Nightly at 1930 local on 146.700 MHz and nightly (except Saturday) at 1200 UTC on 3.555 MHz.

WIA Divisional Bookshops

The following items are available from your Division's Bookshop (see the WIA Division Directory on page 3 for the address of your Division)

	Ref	List Price
ANTENNAS		
Ant. Compendium Vol 2 Software 5.25" IBM Disk	BR293	$22.00
Antenna Compendium Vol 1 — ARRL Book	BR163	$26.00
Antenna Compendium Vol 2 — ARRL Book	BR292	$32.00
Antenna Compendium Vol 3 — ARRL Book	BR453	$37.00
Antenna Impedance Matching — ARRL	BR257	$52.00
Antenna Note Book W1FB — ARRL	BR179	$26.00
Antenna Pattern Worksheets Pkt of 10	BR902	$3.00
Easy Up Antennas	MFJ38	$39.25
G-QRP Antenna Handbook — RSGB — 1992 1st Edition	BR452	$22.50
HF Antenna Collection — RSGB	BR391	$44.00
HF Antennas for all Locations — Moxon — 2nd Edition	BR188	$45.00
Physical Design of Yagi — 3.5" IBM Disk	BR388B	$26.00
Physical Design of Yagi Antennas — The Book	BR388	$52.00
Practical Antennas for Novices	BR35	$18.50
Practical Wire Antennas — RSGB	BR296	$32.00
Reflections Transmission Lines and Antennas — 5.25" IBM	BR348A	$22.00
Reflections Transmission Lines and Antennas — ARRL	BR348	$52.00
The Antenna Handbook — ARRL 1994 edition with disk	BR370A	$65.00
Transmission Line Transformers — ARRL	BR329	$52.00
Yagi Antenna Design — ARRL	BR164	$40.00
BEGINNERS		
Amateur Radio for Beginners — RSGB	BR392	$13.50
First Steps in Radio — Doug DeMaw W1FB	BR385	$16.00
Help For New Hams DeMaw — ARRL	BR308	$26.00
Novice Antenna Notebook — DeMaw W1FB — ARRL	BR162	$20.00
Novice Notes, The Book — QST — ARRL	BR298	$16.00
Radio Theory For Amateur Operators — Swainston — 2nd Ed	BR265	$47.95
Understanding Basic Electronics	BR454	$38.00
WIA Novice Study Guide		$1.50
CALLBOOKS		
Australian Radio Amateur Call Book — 1995		$12.50
Ferrell's Confidential Frequency List	BR387	$40.00
Ham Call CD ROM US & International	BR498	$75.00
International Callbook 1995	BR339	$56.50
Nth American Callbook 1995	BR338	$56.50
Passport to World Band Radio	BR346	$48.00
World Radio TV Handbook	BR450	$40.00
DESIGN AND TECHNICAL		
Amateur Techniques — G3VA — RSGB	BR393	$30.00
Buckmaster Electronic Software CD ROM Compendium	BR497	$45.00
Design Note Book W1FB — ARRL	BR357	$26.00
G-QRP Circuit Handbook — G Dobbs — RSGB	BR441	$31.00
Ham Radio Communications Circuit Files	MFJ37	$24.95
Hints and Kinks — 13th Edition — 1992	BR330	$24.00
Solid State Design — DeMaw — ARRL	BR171	$32.00
Technical Topics Scrapbook — RSGB 1993	BR37	$35.00
HANDBOOKS		
ARRL Handbook — 1995	BR369	$66.00
Electronics Data Book — ARRL	BR201	$40.00
Radio Communication Handbook — RSGB 1994 6th Edition	BR266	$66.00
HISTORY		
200 Meters and Down 1936 — ARRL	BR198	$20.00
50 Years of the ARRL — 1981	BR196	$8.00
Bright Sparks of Wireless — RSGB	BR394	$44.00
Dawn of Amateur Radio — RSGB	BR395	$58.00
Footsteps of Marconi's — 1994	BR53	$49.95
World at Their Finger Tips — RSGB	BR38	$23.00
INTERFERENCE		
Radio Frequency Interference — ARRL — 1992 Edition	BR186	$40.00
The Radio Amateurs Guide to EMC	BR36	$25.00

	Ref	List Price
MISCELLANEOUS		
Beyond Line of Sight	BR459	$32.00
I Love Amateur Radio Car Bumper Sticker — RSGB	BR466	$2.75
I'm On The Air Sticker	BR466A	$2.75
Low Profile Amateur Radio	BR46	$20.00
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QRP Note Book — DeMaw — ARRL	BR170	$26.00
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Radio Auroras — RSGB	BR381	$30.00
Radio Buyers Source Book — ARRL — Volume 1	BR377	$40.00
Radio Buyers Source Book — ARRL — Volume 2	BR3772	$40.00
Slow Scan TV Explained	BR39	$30.00
MORSE CODE		
Morse Code — The Essential Language	BR223	$16.00
Morse Code Tapes Set 1: 5-10 WPM — ARRL	BR331	$22.00
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Morse Tutor Advanced 5.25" IBM Disk	BR328	$60.00
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DXCC Companion — How to Work Your First 100	BR345	$16.00
DXCC Country Listing — ARRL	BR386	$5.00
Locator Map of Europe — RSGB	BR396	$6.00
Log Book — ARRL — 9" x 11" Wire Bound	BR202	$9.00
Low Band DXing — John Devoldere — 2nd Edition 1994	BR195	$52.00
Operating Manual — ARRL — 4th Edition	BR192	$48.00
Operating Manual — RSGB	BR359	$31.00
Prefix Map of the World — RSGB (laminated)	BR397	$25.00
RTTY/AMTOR Companion ARRL 1st Ed 1993	BR45	$21.00
The Complete DXer — W9KNI	BR194	$32.00
Transmitter Hunting	BR222	$43.00
World Grid Locator Atlas — (Maidenhead Locator) — ARRL	BR197	$13.00
PACKET RADIO		
AX.25 Link Layer Protocol — ARRL	BR178	$20.00
Gateway to Packet Radio 2nd edition — ARRL	BR169	$32.00
NOSintro	BR468	$45.00
Packet Radio Companion ARRL 1993 1st Edition	BR285	$20.00
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Satellite Anthology — 1994 3rd Edition — ARRL	BR476	$26.00
Satellite Experimenters Handbook	BR177	$52.00
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Weather Satellite Handbook Software 5.25" IBM Disk	BR326	$22.00
VHF/UHF/MICROWAVE		
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Microwave Handbook Vol 2 — RSGB	BR437	$57.00
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UHF/Microwave Experimenters Manual — ARRL	BR325	$52.00
UHF/Microwave Experimenters Software — ARRL	BR327	$22.00
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VHF/UHF Manual — RSGB	BR267	$40.00
WIA MEMBERS SUNDRIES		
Band Plans Booklet		$2.80
WIA Car Bumper Stickers		$0.50
WIA Car Window Stickers		$0.50
WIA Log Book — Vertical Format		$5.00
WIA Tape — Sounds of Amateur Radio		$7.00

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If the items are carried by your Divisional Bookshop, but are not in stock, your order will be taken and filled as soon as possible.
Divisions may offer discounts to WIA members — check before ordering. Postage and packing, if applicable, is extra.
All orders must be accompanied by a remittance.
The prices are correct as at the date of publication but, due to circumstances beyond the control of the WIA, may change without notice.

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IC-281H

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